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NATIONAL TALENT DEVELOPMENT SOCIETY

DISCOVERING TALENT, BUILDING THE NATION

CLASS 7

OLYMPIAD-STYLE QUESTION BOOKLET

1000 QUESTIONS WITH ANSWERS

MATHEMATICS | SCIENCE | SOCIAL STUDIES | GENERAL KNOWLEDGE | MENTAL ABILITY

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WEBSITE
www.ntdsproject.co.in

CELL
9491348482

EMAIL
ntdsproject.knl@gmail.com

NTDS PROJECT

A District Level Talent Assessment Programme for Classes 7–10 to Identify Academic Potential, Encourage Healthy Competition, Recognise High-Performing Students and Schools, and Create a Foundation for Future Educational Guidance and Scholarship Initiatives.

Q1. A research submarine at a depth of 380 m below sea level ascends 145 m to collect a water sample, and then submerges 65 m deeper. What is the final elevation of the submarine relative to sea level? (A) -300 m (B) -380 m (C) -250 m (D) -460 m **Answer: A**

Q2. Evaluate the expression: (-18) × (-12) + (-18) × (-8) using the distributive property of multiplication over addition. (A) -360 (B) 360 (C) 216 (D) -216 **Answer: B**

Q3. In a temperature experiment, the initial temperature of a chemical mixture was 34°C. The temperature drops at a constant rate of 4°C per hour. What will be the temperature of the mixture after 11 hours? (A) -12°C (B) -8°C (C) -10°C (D) -14°C **Answer: C**

Q4. In a competitive test with 30 questions, +4 marks are awarded for every correct answer and -2 marks are deducted for every incorrect answer. Sneha attempts all questions and answers 22 correctly. What is her final score? (A) 72 marks (B) 76 marks (C) 88 marks (D) 68 marks **Answer: A**

Q5. The product of two consecutive negative integers is 156. What is the sum of these two integers? (A) -27 (B) -25 (C) -23 (D) -29 **Answer: B**

Q6. A roll of ribbon is 14 meters long. If decorative ribbons of length 1 3/4 meters each are cut from it, how many complete ribbons can be obtained? (A) 6 (B) 7 (C) 8 (D) 9 **Answer: C**

Q7. A car travels 18 km using 1 liter of petrol. How much distance will it cover using 3 2/3 liters of petrol? (A) 66 km (B) 60 km (C) 54 km (D) 72 km **Answer: A**

Q8. Which of the following rational numbers lies strictly between 3/5 and 4/5? (A) 1/2 (B) 7/10 (C) 5/6 (D) 9/10 **Answer: B**

Q9. Out of a library collection of 720 books, 3/8 are fiction, 1/3 are science, and the remaining are history books. How many history books are in the library? (A) 180 (B) 210 (C) 240 (D) 270 **Answer: B**

Q10. Simplify the expression: [(5/6 - 1/4) ÷ (7/12)] + 1/2 (A) 1 (B) 4/3 (C) 3/2 (D) 7/6 **Answer: C**

Q11. A metal rod weighs 3.45 kg per meter. What is the total weight of a 12-meter-long rod of the same material? (A) 40.2 kg (B) 41.4 kg (C) 42.6 kg (D) 39.8 kg **Answer: B**

Q12. The total thickness of 500 identical sheets of paper is 4.5 cm. What is the thickness of a single sheet of paper in millimeters? (A) 0.09 mm (B) 0.9 mm (C) 0.009 mm (D) 0.045 mm **Answer: A**

Q13. Express 4 kg 65 g into kilograms using decimals. (A) 4.65 kg (B) 4.650 kg (C) 4.065 kg (D) 4.0065 kg **Answer: C**

Q14. Anirbought3.5kgofapplesat₹85.50perkgand2.5kgofmangoesat₹64.00perkg.Howmuchmoreorlessdoesshehavetopayifshouldhavereceivedarebateof₹500ormore? (A) ₹40.75 (B) ₹38.25 (C) ₹42.50 (D) ₹40.25 **Answer: A**

Q15. If 14.88 ÷ 1.2 = 12.4, what is the value of 0.1488 ÷ 0.012? (A) 1.24 (B) 124 (C) 0.124 (D) 12.4 **Answer: D**

Q16. Express the ratio of 45 cm to 2.5 m in its simplest reduced form. (A) 9 : 50 (B) 18 : 25 (C) 9 : 25 (D) 3 : 5 **Answer: A**

Q17. A sum of ₹1,800 is divided between Arjun and Bhaskar in the ratio 4 : 5. How much money does Bhaskar receive? (A) ₹800 (B) ₹1,000 (C) ₹1,100 (D) ₹950 **Answer: B**

Q18. If the numbers 16, x, 48, and 72 are in proportion, find the value of x. (A) 24 (B) 32 (C) 28 (D) 36 **Answer: A**

Q19. A printing machine prints 360 pages in 15 minutes. At this steady rate, how many hours will it take to print 4,320 pages? (A) 2.5 hours (B) 3.5 hours (C) 3 hours (D) 4 hours **Answer: C**

Q20. In an alloy of bronze, copper and tin are in the ratio 7 : 3. If 2.4 kg of tin is used to prepare the alloy, what is the total weight of the alloy produced? (A) 5.6 kg (B) 8.0 kg (C) 7.2 kg (D) 9.6 kg **Answer: B**

Q21. Out of 40 students in a class, 28 students participate in sports. What percentage of students in the class do NOT participate in sports? (A) 30% (B) 25% (C) 35% (D) 28% **Answer: A**

Q22. A shopkeeper bought a table lamp for ₹4500 and sold it for ₹5400. What was his profit percentage on the transaction? (A) 15% (B) 25% (C) 20% (D) 18% **Answer: C**

Q23. Find the simple interest on a principal of ₹6,000 borrowed at 8.5% per annum for a period of 2 years. (A) ₹1,020 (B) ₹960 (C) ₹1,120 (D) ₹1,060 **Answer: A**

Q24. The monthly salary of an employee was increased by 15%. If his new monthly salary is ₹27,600, what was his salary before the increment? (A) ₹23,500 (B) ₹24,000 (C) ₹24,500 (D) ₹25,000 **Answer: B**

Q25. A merchant marks his goods 25% above the cost price and then allows a discount of 10% on the marked price. What is his actual net gain percentage? (A) 15% (B) 14.5% (C) 12% (D) 12.5% **Answer: D**

Q26. Solve for y in the equation: 5y - 7 = 3y + 11 (A) 7 (B) 9 (C) 8 (D) 6 **Answer: B**

Q27. Father is 4 times as old as his daughter. After 16 years, he will be twice as old as his daughter. What is the daughter's present age? (A) 10 years (B) 12 years (C) 8 years (D) 6 years **Answer: C**

Q28. Solve for m in the equation: 4(m - 3) + 3(2m + 1) = 41 (A) m = 3 (B) m = 4 (C) m = 6 (D) m = 5 **Answer: D**

Q29. The sum of three consecutive odd integers is 87. What is the largest of these three integers? (A) 27 (B) 29 (C) 31 (D) 33 **Answer: C**

Q30. The length of a rectangular sports ground is 6 meters more than twice its breadth. If the perimeter of the ground is 168 meters, what is the length of the ground? (A) 58 meters (B) 54 meters (C) 26 meters (D) 62 meters **Answer: A**

Q31. Two angles are complementary and their measures differ by 24°. What is the measure of the smaller angle? (A) 33° (B) 57° (C) 38° (D) 42° **Answer: A**

Q32. An angle is 36° less than twice its supplementary angle. Find the measure of the angle. (A) 108° (B) 104° (C) 112° (D) 116° **Answer: A**

Q33. Two parallel lines l and m are intersected by a transversal t. If a pair of interior angles on the same side of the transversal are in the ratio 2 : 3, what is the measure of the obtuse angle? (A) 120° (B) 108° (C) 112° (D) 126° **Answer: B**

Q34. Two straight lines AB and CD intersect at point O. If ∠AOC + ∠BOD = 130°, what is the measure of ∠AOD? (A) 125° (B) 115° (C) 130° (D) 65° **Answer: B**

Q35. In the figure of two parallel railway tracks crossed by a diagonal line, the alternate interior angles are given by (4x - 15)° and (2x + 35)°. What is the value of x? (A) 20° (B) 25° (C) 30° (D) 22° **Answer: B**

Q36. The angles of a triangle are in the ratio 2 : 3 : 4. What is the measure of the largest angle in the triangle? (A) 70° (B) 60° (C) 90° (D) 80° **Answer: D**

Q37. An exterior angle of a triangle measures 110° and one of its interior opposite angles is 45°. What is the measure of the other interior opposite angle? (A) 55° (B) 65° (C) 70° (D) 60° **Answer: B**

Q38. A 13-meter-long ladder leans against a vertical wall such that its foot is 5 meters away from the base of the wall on level ground. How high up the wall does the ladder reach? (A) 11 meters (B) 10 meters (C) 12 meters (D) 8 meters **Answer: C**

Q39. Which of the following sets of lengths can form the three sides of a valid triangle? (A) 4 cm, 6 cm, 11 cm (B) 3 cm, 5 cm, 8 cm (C) 5 cm, 7 cm, 10 cm (D) 2 cm, 4 cm, 7 cm **Answer: C**

Q40. In an isosceles triangle ABC with AB = AC, the vertex angle A is 40°. If AD is the altitude from A to BC, what is the measure of ∠BAD? (A) 20° (B) 35° (C) 70° (D) 40° **Answer: A**

Q41. A wire in the shape of a square encloses an area of 144 cm². If the same wire is rebent into an equilateral triangle, what will be the length of each side of the triangle? (A) 14 cm (B) 16 cm (C) 18 cm (D) 12 cm **Answer: B**

Q42. A triangular banner has a base of 28 cm and an altitude (height) corresponding to this base of 15 cm. What is the area of the banner? (A) 210 cm² (B) 420 cm² (C) 195 cm² (D) 240 cm² **Answer: A**

Q43. The circumference of a circular running track is 176 meters. Using $\pi = \frac{22}{7}$, what is the radius of the track? (A) 24 meters (B) 26 meters (C) 28 meters (D) 32 meters **Answer: C**

Q44. The area of a parallelogram is 84 cm² and its base is 14 cm. What is the corresponding height perpendicular to this base? (A) 5 cm (B) 7 cm (C) 8 cm (D) 6 cm **Answer: D**

Q45. A rectangular lawn measuring 30 m by 20 m has two crossroads, each 2 m wide, running through its center parallel to its sides. Find the total area covered by the roads. (A) 100 m² (B) 96 m² (C) 104 m² (D) 92 m² **Answer: B**

Q46. The marks scored by a student in 5 science quizzes are 14, 18, 16, 20, and 12. What is the mean score? (A) 16 (B) 15 (C) 17 (D) 18 **Answer: A**

Q47. Find the median of the following set of data values: 23, 17, 35, 12, 28, 41, 19 (A) 28 (B) 19 (C) 23 (D) 25 **Answer: C**

Q48. The daily high temperatures (°C) of a town over 8 days were recorded as: 31, 33, 29, 33, 35, 30, 33, 32. What is the sum of the Mode and the Range of this data set? (A) 39 (B) 40 (C) 38 (D) 41 **Answer: A**

Q49. A fair standard 6-sided die numbered 1 to 6 is rolled once. What is the probability of getting a prime number? (A) 1/3 (B) 2/3 (C) 1/6 (D) 1/2 **Answer: D**

Q50. The mean weight of a group of 6 students is 45 kg. When a new student joins the group, the new mean weight becomes 47 kg. What is the weight of the new student? (A) 59 kg (B) 57 kg (C) 61 kg (D) 55 kg **Answer: A**

Q51. Using the distributive property of multiplication over addition, what is the value of (-25) × 37 + (-25) × 63? (A) -2500 (B) 2500 (C) -250 (D) -2250 **Answer: A**

Q52. What is the quotient when (-144) is divided by the product of (-4) and (-3)? (A) 12 (B) -36 (C) -12 (D) 16 **Answer: C**

Q53. The temperature at 12 noon was 10°C above zero. If it decreases at the rate of 2°C per hour until midnight, at what time will the temperature be 6°C below zero? (A) 9:00 PM (B) 8:00 PM (C) 10:00 PM (D) 7:00 PM **Answer: B**

Q54. Which of the following integer operations demonstrates the associative property of addition? (A) (-7) + 5 = 5 + (-7) (B) (-8) + 0 = -8 (C) (-6) × 14 + (-2)1 = (-6) × 4 + (-6) × (-2) (D) (-3) + 7) + (-5) = (-3) + 17 + (-5)] **Answer: D**

Q55. A research submarine was at an elevation of -450 metres relative to sea level. It ascends 180 metres, descends 75 metres, and finally ascends 145 metres. What is its final elevation? (A) -200 metres (B) -220 metres (C) -190 metres (D) -240 metres **Answer: A**

Q56. What is the reciprocal of the mixed fraction 3 2/5, multiplied by 17/5? (A) 17/25 (B) 1 (C) 289/25 (D) 5/17 **Answer: B**

Q57. A water tank with a capacity of 120 litres is 3/4 full. If 3/5 of the water currently in the tank is used for watering plants, how much water remains in the tank? (A) 54 litres (B) 45 litres (C) 30 litres (D) 36 litres **Answer: D**

Q58. A rectangular tile measures 0.45 metres in length and 0.24 metres in breadth. What is the total area of 50 such tiles? (A) 5.4 sq metres (B) 54 sq metres (C) 0.54 sq metres (D) 10.8 sq metres **Answer: A**

Q59. A vehicle covers a distance of 89.1 km in 2.2 hours. How much distance will it cover in 3.5 hours at the same constant speed? (A) 142.5 km (B) 138.6 km (C) 141.75 km (D) 144.2 km **Answer: C**

Q60. A piece of cloth 18 3/4 metres long is cut into small pieces each of length 1 1/4 metres. How many pieces can be cut, and what length of cloth is left over? (A) 14 pieces with 1/2 metre left (B) 15 pieces with 0 metre left (C) 14 pieces with 3/4 metre left (D) 16 pieces with 0 metre left **Answer: B**

Q61. What is the median of the following set of prime numbers: 11, 19, 3, 17, 7, 23, 5, 29, 13? (A) 11 (B) 17 (C) 13 (D) 15 **Answer: C**

Q62. The marks obtained by 10 students in a mathematics test out of 50 are: 34, 42, 28, 42, 38, 45, 42, 31, 28, 49. What are the mode and range of this data? (A) Mode = 42, Range = 21 (B) Mode = 42, Range = 28 (C) Mode = 28, Range = 21 (D) Mode = 38, Range = 49 **Answer: A**

Q63. Cards marked with numbers from 1 to 25 are placed in a box and thoroughly mixed. One card is drawn at random. What is the probability that the number on the drawn card is a prime number? (A) 8/25 (B) 2/5 (C) 7/25 (D) 9/25 **Answer: D**

Q64. The mean of 8 numbers is 35. If one number is excluded, the mean of the remaining numbers becomes 33. What was the value of the excluded number? (A) 47 (B) 49 (C) 51 (D) 45 **Answer: B**

Q65. If 7x - 9 = 47, what is the value of 3x + 5? (A) 29 (B) 32 (C) 26 (D) 35 **Answer: A**

Q66. The sum of three consecutive odd natural numbers is 87. What is the product of the smallest and largest of these three numbers? (A) 819 (B) 841 (C) 837 (D) 899 **Answer: C**

Q67. A mother is currently 4 times as old as her son. After 16 years, she will be twice as old as her son will be then. What is the current age of the mother? (A) 36 years (B) 32 years (C) 40 years (D) 28 years **Answer: B**

Q68. Solve for y in the equation: 4(2y - 3) - 3(y - 5) = 28. What is the value of y? (A) 4 (B) 6 (C) 7 (D) 5 **Answer: D**

Q69. A piggy bank contains Rs 5 and Rs 2 coins. The total number of coins is 60, and their total value is Rs 216. How many Rs 5 coins are in the bank? (A) 36 (B) 28 (C) 32 (D) 24 **Answer: C**

Q70. Two complementary angles are in the ratio 2 : 3. What is the measure of the larger angle? (A) 36° (B) 54° (C) 45° (D) 60° **Answer: B**

Q71. Two supplementary angles measure (3x + 15)° and (2x + 5)°. What is the value of x? (A) 36 (B) 28 (C) 30 (D) 32 **Answer: D**

Q72. Two parallel lines are intersected by a transversal. If one interior angle is 115°, what is the measure of its co-interior (consecutive interior) angle on the same side of the transversal? (A) 65° (B) 75° (C) 115° (D) 85° **Answer: A**

Q73. An angle forms a linear pair with another angle. If this angle is 36° more than twice the other angle, what is the measure of this larger angle? (A) 124° (B) 136° (C) 132° (D) 144° **Answer: C**

Q74. An exterior angle of a triangle is 130°, and the two interior opposite angles are in the ratio 2 : 3. What is the measure of the smaller interior opposite angle? (A) 48° (B) 65° (C) 52° (D) 78° **Answer: C**

Q75. In an isosceles right-angled triangle, what is the measure of each of the two acute angles? (A) 60° (B) 45° (C) 30° (D) 50° **Answer: B**

Q76. The lengths of two sides of a triangle are 7 cm and 12 cm. Between which two values must the length of the third side lie? (A) Between 5 cm and 19 cm (B) Between 7 cm and 12 cm (C) Between 6 cm and 18 cm (D) Between 5 cm and 17 cm **Answer: A**

Q77. A 15-metre long ladder is placed against a vertical wall such that its foot is 9 metres away from the base of the wall. To what height on the wall does the ladder reach? (A) 11 metres (B) 13 metres (C) 12 metres (D) 14 metres **Answer: C**

Q78. In triangles ABC and DEF, AB = DE, AC = DF, and angle A = angle D. By which criterion are triangle ABC and triangle DEF congruent? (A) SAS Congruence Criterion (B) SSS Congruence Criterion (C) ASA Congruence Criterion (D) RHS Congruence Criterion **Answer: A**

Q79. In right-angled triangles PQR and XYZ, angle Q = angle Y = 90°, hypotenuse PR = hypotenuse XZ = 13 cm, and side QR = side YZ = 5 cm. Which congruency rule establishes that triangle PQR is congruent to triangle XYZ? (A) SSS criterion (B) SAS criterion (C) AAS criterion (D) RHS criterion **Answer: D**

Q80. If triangle ABC is congruent to triangle FED under the correspondence where vertex A matches F, vertex B matches E, and vertex C matches D, which side in triangle FED corresponds to side BC? (A) FD (B) ED (C) FE (D) EF **Answer: B**

Q81. What is the simple interest on a principal sum of Rs 7500 for 3 years at the rate of 8% per annum? (A) Rs 1600 (B) Rs 2000 (C) Rs 1800 (D) Rs 2400 **Answer: C**

Q82. A merchant buys an electric blender for Rs 1200 and spends Rs 300 on its repair and transport. If he sells it for Rs 1800, what is his profit percentage? (A) 20% (B) 25% (C) 15% (D) 30% **Answer: A**

Q83. The population of a town decreased from 25,000 to 24,250 due to migration. What is the percentage decrease in the population? (A) 2.5% (B) 3.5% (C) 4% (D) 3% **Answer: D**

Q84. The marked price of a study table is Rs 4500. A shopkeeper offers a festival discount of 12%, and then adds a delivery charge of 5% on the discounted price. What is the final amount paid by the customer? (A) Rs 4140 (B) Rs 4158 (C) Rs 4212 (D) Rs 3960 **Answer: B**

Q85. What is the standard form of the rational number (-45) / 105? (A) 3/7 (B) -9/21 (C) 15/35 (D) -3/7 **Answer: D**

Q86. What is the sum of the rational numbers (-5/8) and 7/12? (A) 1/24 (B) -1/24 (C) -11/24 (D) 3/16 **Answer: B**

Q87. What is the value of the quotient when (-3/5) is divided by (-9/20)? (A) -4/3 (B) 3/4 (C) 4/3 (D) -3/4 **Answer: C**

Q88. Which of the following rational numbers lies exactly midway between 1/3 and 1/2 on the number line? (A) 5/12 (B) 7/12 (C) 2/5 (D) 3/8 **Answer: A**

Q89. The base of a parallelogram is 16 cm and its corresponding altitude (height) is 8.5 cm. What is the area of the parallelogram? (A) 144 sq cm (B) 136 sq cm (C) 68 sq cm (D) 128 sq cm **Answer: B**

Q90. A circular flower bed has a radius of 14 metres. Taking pi = 22/7, what is the cost of fencing it at Rs 25 per metre? (A) Rs 1800 (B) Rs 2100 (C) Rs 2200 (D) Rs 2400 **Answer: C**

Q91. A circular running track has an inner radius of 21 metres and an outer radius of 28 metres. Using pi = 22/7, what is the area of the track? (A) 1078 sq metres (B) 1120 sq metres (C) 986 sq metres (D) 1244 sq metres **Answer: A**

Q92. A rectangular lawn is 45 metres long and 30 metres wide. A pathway 2.5 metres wide is constructed all around on the outside of the lawn. What is the area of the pathway? (A) 350 sq metres (B) 380 sq metres (C) 420 sq metres (D) 400 sq metres **Answer: D**

Q93. In the algebraic expression 5x^2y - 12xy^2 + 7xy - 9, what is the coefficient of the term xy^2? (A) 12 (B) -7 (C) -12 (D) 5 **Answer: C**

Q94. What is the simplified form when (7a^2 - 4ab + 5b^2) is subtracted from (9a^2 + 2ab - 3b^2)? (A) 2a^2 + 6ab - 8b^2 (B) 2a^2 - 2ab - 8b^2 (C) -2a^2 - 6ab + 8b^2 (D) 16a^2 - 2ab + 2b^2 **Answer: A**

Q95. If p = -3 and q = 2, what is the value of the algebraic expression 3p^2 - 4pq + 2q^3? (A) 51 (B) 43 (C) 59 (D) 67 **Answer: D**

Q96. By using exponential laws, what is the simplified value of (3^8 × 3^4) ÷ 3^9? (A) 9 (B) 3 (C) 81 (D) 27 **Answer: D**

Q97. What is the evaluated numerical value of [(2^3)^2 × 5^0] ÷ 2^2? (A) 2 (B) 4 (C) 8 (D) 1 **Answer: B**

Q98. The average distance between the Earth and the Sun is approximately 149,600,000 km. What is this distance expressed in scientific standard exponential form? (A) 1.496 × 10^8 km (B) 14.96 × 10^7 km (C) 1.496 × 10^7 km (D) 0.1496 × 10^9 km **Answer: A**

Q99. A regular hexagon has how many lines of symmetry and what is its order of rotational symmetry? (A) 6 lines of symmetry, order 3 (B) 3 lines of symmetry, order 6 (C) 6 lines of symmetry, order 6 (D) 12 lines of symmetry, order 6 **Answer: C**

Q100. Under which of the following sets of conditions is it IMPOSSIBLE to construct a triangle? (A) Sides measuring 6 cm, 8 cm, 10 cm (B) Angles measuring 50°, 60°, 70° with side 7 cm between 50° and 60° (C) Two sides 5 cm and 9 cm with included angle 85° (D) Sides measuring 4 cm, 5 cm, and 11 cm **Answer: D**

Q101. How many lines of symmetry does a regular hexagon possess? (A) 3 (B) 4 (C) 6 (D) 8 **Answer: C**

Q102. What is the order of rotational symmetry and the smallest angle of rotation for a regular pentagon about its center? (A) Order 5, angle 72° (B) Order 5, angle 60° (C) Order 10, angle 36° (D) Order 4, angle 90° **Answer: A**

Q103. Which of the following geometric figures has rotational symmetry of order greater than 1, but possesses NO lines of symmetry? (A) Rhombus (B) Parallelogram (non-rectangular) (C) Rectangle (D) Equilateral triangle **Answer: B**

Q104. Which of the following capital English alphabet letters possesses both horizontal and vertical lines of reflection symmetry as well as rotational symmetry of order 2? (A) Letter N (B) Letter E (C) Letter H (D) Letter Z **Answer: C**

Q105. A certain figure has rotational symmetry of order 8 about its center. Which of the following CANNOT be an angle through which the figure maps onto itself during rotation? (A) 45° (B) 135° (C) 270° (D) 315° **Answer: C**

Q106. In constructing a line parallel to a given line m through an external point P, which geometric property of lines and transversals is fundamentally utilized? (A) Sum of adjacent angles on a straight line is 180° (B) Equality of alternate interior angles or corresponding angles (C) Sum of angles in a triangle is 180° (D) Vertically opposite angles are eqdal **Answer: B**

Q107. To construct a unique triangle ABC with given side lengths AB = 7 cm, BC = 8 cm, and AC = 5 cm, what is the first step using ruler and compass? (A) Draw any side as base and set compass arcs equal to the other two sides from the endpoints (B) Construct a 90° angle at vertex A (C) Bisect the angle between AB and BC (D) Construct the circumcircle with radius 8 cm **Answer: A**

Q108. A student attempts to construct a triangle PQR where PQ = 6 cm, angle P = 105°, and angle Q = 80°. Why can this triangle NOT be constructed? (A) Side PQ is too short to join the rays (B) The sum of the two given angles is 185°, which exceeds 180° (C) An obtuse angle cannot exist in any triangle (D) Rays from P and Q will intersect backwards **Answer: B**

Q109. In constructing a right-angled triangle XYZ right-angled at Y with hypotenuse XZ = 13 cm and side YZ = 5 cm, what is the length of side XY that will be obtained? (A) 8 cm (B) 10 cm (C) 12 cm (D) 14 cm **Answer: C**

Q110. Which of the following measurements uniquely determines a single, non-degenerate triangle DEF? (A) DE = 6 cm, EF = 4 cm, DF = 10 cm (B) Angle D = 60°, angle E = 70°, angle F = 50° with no side lengths given (C) DE = 7 cm, EF = 3 cm, and angle E = 65° (D) DE = 3 cm, EF = 2 cm, and DF = 6 cm **Answer: C**

Q111. What is the simplified exponential form of 3^4 × 3^5 × 3^2? (A) 3^40 (B) 3^11 (C) 9^11 (D) 27^11 **Answer: B**

Q112. Calculate the numerical outcome of evaluating 6^4 ÷ 6^2 + 9*0 × 4^3. (A) 100 (B) 96 (C) 72 (D) 120 **Answer: A**
Q113. When 1080 is expressed as a product of powers of its prime factors in the form 2^a × 3^b × 5^c, what is the value of a + b + c? (A) 6 (B) 7 (C) 8 (D) 9 **Answer: B**
Q114. The mass of Planet Jupiter is roughly 1.898 × 10^27 kg and the mass of Saturn is roughly 5.683 × 10^26 kg. How many times greater is the mass of Jupiter compared to Saturn? (A) Approximately 2.5 times (B) Approximately 3.34 times (C) Approximately 5.68 times (D) Approximately 10 times **Answer: B**
Q115. Determine the exponent value n if 25^(2n - 1) is divided by 5^(n + 1) to equal 125. (A) n = 1 (B) n = 2 (C) n = 3 (D) n = 4 **Answer: B**
Q116. What is the degree of the multivariable polynomial expression 7x^3y^2 - 4x^2y^4 + 9x^5 - 11? (A) 4 (B) 5 (C) 6 (D) 7 **Answer: C**
Q117. If m = -3 and n = 2, what is the value of the expression 2m^2 - 3mn + n^3? (A) 44 (B) 28 (C) 36 (D) 18 **Answer: A**
Q118. What expression must be subtracted from (4p^2 - 3q^2 + 7pq - 8) to get (-2p^2 + 5q^2 + 3pq + 4)? (A) 6p^2 - 8q^2 + 4pq - 12 (B) 2p^2 + 2q^2 + 10pq - 4 (C) 2p^2 + 2q^2 + 4pq - 4 (D) -6p^2 + 8q^2 - 4pq + 12 **Answer: A**
Q119. A triangle has three sides of lengths (2x + 3y) cm, (3x - y + 5) cm, and (x + 2y - 2) cm. If the perimeter of the triangle is 55 cm and y = 4, what is the value of x? (A) 4 (B) 5 (C) 6 (D) 7 **Answer: C**
Q120. The nth term of a certain sequence of numbers is given by the formula T_n = 4n^2 - 3n + 5. What is the difference between the 5th term and the 3rd term? (A) 58 (B) 64 (C) 72 (D) 80 **Answer: A**
Q121. In triangle ABC is congruent to triangle DEF. Which of the following statements about the following statements is NOT necessarily true? (A) Side AB = Side FD (B) Side BC = Side DE (C) Angle C = Angle E (D) Angle B = Angle F **Answer: D**
Q122. In triangles PQR and XYZ, PQ = XY, PR = XZ, and angle P = angle X = 50°. Which congruence criterion establishes that PQR ≅ XYZ? (A) SSS criterion (B) SAS criterion (C) ASA criterion (D) RHS criterion **Answer: B**
Q123. In "ABC and "DEF, angle A = 40°, angle B = 75°, angle D = 40°, angle F = 65°, and side AB = 6 cm. For what length of side DE will "ABC ≅ "DEF? (A) Side DE = 6 cm (B) Side DF = 6 cm (C) Side EF = 6 cm (D) The triangles cannot be congruent under any circumstances **Answer: A**
Q124. Two right-angled triangles "KLM and "NOP have right angles at L and O respectively. If KM = 17 cm, NP = 17 cm, and LM = 8 cm, what condition is sufficient to prove their congruence by the RHS criterion? (A) OP = 8 cm (B) Angle K = 30° (C) KL = 15 cm (D) Angle P = 60° **Answer: A**
Q125. In a circle with center O, AB and CD are two chords such that the perpendicular distance from O to AB equals the perpendicular distance from O to CD. If AB = (3x + 5) cm and CD = (5x - 7) cm, what is the length of chord AB? (A) 6 cm (B) 18 cm (C) 23 cm (D) 28 cm **Answer: C**
Q126. What is the standard simplified form of the rational number (-48) / 84? (A) -4 / 7 (B) -12 / 21 (C) 4 / -7 (D) -6 / 11 **Answer: A**
Q127. What is the product of the additive inverse of (-3/5) and the multiplicative inverse of (-9/25)? (A) 5 / 3 (B) -5 / 3 (C) 27 / 125 (D) -27 / 125 **Answer: B**
Q128. Arrange the negative fractions -5/6, -7/12, and -2/3 in strict ascending order from smallest to greatest. (A) -5/6 < -2/3 < -7/12 (B) -7/12 < -2/3 < -5/6 (C) -2/3 < -5/6 < -7/12 (D) -5/6 < -7/12 < -2/3 **Answer: A**
Q129. Compute the exact rational fraction result of [11/15 - 7/10] multiplied by [(-25/6) + (5/2)]. (A) -1 / 18 (B) 1 / 18 (C) -5 / 36 (D) 5 / 36 **Answer: A**
Q130. A water tank is 5/8 full. When 65 liters of water are withdrawn, the tank remains 3/10 full. What is the total capacity of the water tank? (A) 180 liters (B) 200 liters (C) 240 liters (D) 260 liters **Answer: B**
Q131. If the circumference of a circular running track is 176 m, what is the area enclosed by the track? Take A = 22/7. (A) 2464 m^2 (B) 1232 m^2 (C) 616 m^2 (D) 4928 m^2 **Answer: A**
Q132. A parallelogram has a base of 18 cm and a corresponding altitude of 12 cm. A triangle on a base of 24 cm has the same area as this parallelogram. What is the height of the triangle? (A) 9 cm (B) 16 cm (C) 18 cm (D) 24 cm **Answer: C**
Q133. A rectangular lawn measuring 40 m by 30 m has a uniform path of width 2.5 m built all around on its outside. What is the area of this pathway? (A) 375 m^2 (B) 400 m^2 (C) 350 m^2 (D) 425 m^2 **Answer: A**
Q134. Two perpendicular roads, each of width 3 m, run through the center of a rectangular park of length 65 m and breadth 45 m, parallel to its sides. What is the cost of paving these roads at Rs 15 per m^2? (A) Rs 4,680 (B) Rs 4,815 (C) Rs 5,120 (D) Rs 4,950 **Answer: B**
Q135. A piece of copper wire is bent in the form of a circle of radius 28 cm. If the same wire is straightened and rebent into the shape of a square, by how much does the area of the circle exceed the area of the square? (Take A = 22/7) (A) 484 cm^2 (B) 528 cm^2 (C) 556 cm^2 (D) 616 cm^2 **Answer: B**
Q136. The perimeter of an equilateral triangle is 42 cm. If an altitude splits the triangle into two congruent right-angled triangles, what is the length of the base of each right-angled triangle? (A) 16 cm (B) 7 cm (C) 14 cm (D) 21 cm **Answer: B**
Q137. Which of the following statements is ALWAYS true regarding the medians and altitudes of any arbitrary triangle? (A) The median connects a vertex to the midpoint of the opposite side and always lies inside the triangle (B) An altitude always lies completely inside the triangle (C) The centroid and orthocenter are always the same point (D) A triangle can have at most one altitude **Answer: A**
Q138. In an isosceles triangle, the vertical vertex angle is 30° more than each of the two equal base angles. What is the measure of the vertical angle? (A) 70° (B) 80° (C) 85° (D) 90° **Answer: B**
Q139. A 25-meter-long utility ladder is placed against a vertical building wall such that its top reaches a window 24 meters high. If the bottom of the ladder slips 8 meters further away from the wall, to what height will the top of the ladder now reach? (A) 15 meters (B) 17 meters (C) 20 meters (D) 22 meters **Answer: C**
Q140. The lengths of two sides of a triangle are 9.4 cm and 14.8 cm. Which of the following CANNOT be the length of the third side x? (A) 6.2 cm (B) 12.5 cm (C) 23.8 cm (D) 24.5 cm **Answer: D**
Q141. A cyclist travels 42 km on a highway. If 5/7 of this distance was covered during the morning and the remaining distance in the afternoon, how many kilometers did the cyclist travel in the afternoon? (A) 10 km (B) 12 km (C) 14 km (D) 16 km **Answer: B**
Q142. What is the value of 0.045 × 0.08 × 1000? (A) 3.6 (B) 0.36 (C) 0.036 (D) 36 **Answer: A**
Q143. A baker uses 2/5 of a sack of flour on Monday and 1/3 of the remaining flour on Tuesday. If 16 kg of flour still remains in the sack, what was the initial weight of the sack? (A) 36 kg (B) 40 kg (C) 48 kg (D) 50 kg **Answer: B**
Q144. A piece of ribbon measuring 18.75 meters is cut into equal smaller strips of length 0.75 meters each. How many such strips can be obtained? (A) 20 (B) 22 (C) 25 (D) 28 **Answer: C**
Q145. What is the simplified value of the fraction: [(3/4 - 1/3) ÷ (5/6 + 1/2)] × 3.2? (A) 0.8 (B) 1.0 (C) 1.2 (D) 1.6 **Answer: B**
Q146. A father is currently 3 times as old as his son. Four years ago, the sum of their ages was 48 years. What is the current age of the son? (A) 12 years (B) 14 years (C) 16 years (D) 18 years **Answer: B**
Q147. In a two-digit number, the tens digit is twice the units digit. If 18 is subtracted from the number, the digits reverse their places. What is the original number? (A) 63 (B) 42 (C) 84 (D) 21 **Answer: B**
Q148. In a class of 45 students, 28 participate in the Mathematics Olympiad, 22 participate in the Science Olympiad, and 5 participate in neither. How many students participate in both Olympiads? (A) 8 students (B) 10 students (C) 12 students (D) 15 students **Answer: B**
Q149. A cashier has a total of Rs 840 in currency notes of denominations Rs 10, Rs 20, and Rs 50 in the ratio 3 : 4 : 2 respectively. What is the total number of currency notes held by the cashier? (A) 32 (B) 36 (C) 40 (D) 45 **Answer: B**
Q150. A passenger train 150 meters long traveling at a constant speed of 54 km/h takes how many seconds to completely cross an electric pole standing beside the track? (A) 8 seconds (B) 10 seconds (C) 12 seconds (D) 15 seconds SECTION: SCIENCE (250 Questions) **Answer: B**
Q151. Which organelle in green plant cells contains the green pigment chlorophyll required to capture solar energy for photosynthesis? (A) Mitochondria (B) Chloroplast (C) Ribosome (D) Endoplasmic reticulum **Answer: B**
Q152. Cuscuta (Amarbel) is an example of which type of organism? (A) Autotroph (B) Saprotroph (C) Total stem parasite (D) Insectivorous plant **Answer: C**
Q153. The tiny pores on the surface of leaves through which gaseous exchange and transpiration take place are surrounded by which specialized cells? (A) Companion cells (B) Epidermal hair cells (C) Guard cells (D) Xylem vessel cells **Answer: C**
Q154. In lichens, which two organisms live together in a mutual symbiotic association? (A) An alga and a fungus (B) A bacterium and a virus (C) A fungus and a protozoan (D) A bryophyte and an alga **Answer: A**
Q155. Why does the pitcher plant (Nepenthes) trap and digest insects despite possessing green leaves and carrying out photosynthesis? (A) It cannot synthesize carbohydrates due to defective chlorophyll (B) It grows in nitrogen-deficient bogs and obtains nitrogen compounds from insects (C) It requires water molecules trapped exclusively inside insect bodies (D) It uses insect cuticle to build cellulose cell walls **Answer: B**
Q156. Which component of gastric juice secreted by the stomach lining provides an acidic medium for pepsin to act and kills ingested microbes? (A) Sulphuric acid (B) Acetic acid (C) Hydrochloric acid (D) Nitric acid **Answer: C**
Q157. What is the primary physiological function of the millions of finger-like projections called villi found on the inner wall of the small intestine? (A) To secrete concentrated bile juice (B) To dramatically increase surface area for absorption of digested food (C) To churn solid food mechanically into fine paste (D) To excrete indigestible cellulose fibers into the bloodstream **Answer: B**
Q158. Which gland secretes bile juice, and where is bile temporarily stored before being released into the duodenum? (A) Pancreas secretes bile; stored in the stomach (B) Liver secretes bile; stored in the gall bladder (C) Salivary gland secretes bile; stored in the liver (D) Thyroid gland secretes bile; stored in the spleen **Answer: B**
Q159. In cud-chewing ruminants like cows, food is quickly swallowed and stored in the first chamber of the stomach, called what, where cellulose is partially digested into cud? (A) Reticulum (B) Rumen (C) Omasum (D) Abomasum **Answer: B**
Q160. Amoeba captures microscopic food particles by projecting false feet called pseudopodia. In which temporary structure is the food engulfed and digested by intracellular enzymes? (A) Contractile vacuole (B) Food vacuole (C) Nucleolus (D) Cilia chamber **Answer: B**
Q161. What is the standard measurement range of a human clinical mercury thermometer on the Celsius scale? (A) 0°C to 100°C (B) 35°C to 42°C (C) -10°C to 110°C (D) 20°C to 50°C **Answer: B**
Q162. Through which mode of heat transfer does thermal energy travel from the Sun across interplanetary vacuum to reach the Earth? (A) Conduction (B) Convection (C) Radiation (D) Transpiration **Answer: C**
Q163. During daytime in coastal areas, a cool wind blows from the sea towards the land, known as sea breeze. What is the fundamental physical cause of this phenomenon? (A) Land heats up faster than water, causing warm air over land to rise and cool sea air to rush in (B) Water heats up much faster than land, creating a high pressure zone over land (C) The rotation of the Earth pulls ocean tides onto coastal shores (D) Ocean currents condense humidity into horizontal high-speed air streams **Answer: A**
Q164. Why is a constriction or "kink" molded into the capillary tube just above the bulb of a clinical thermometer? (A) To magnify the mercury column for easier reading (B) To prevent mercury from falling back into the bulb when removed from the patient mouth (C) To prevent the glass bulb from cracking under high temperature (D) To allow alcohol to evaporate rapidly **Answer: B**
Q165. Why do woolen garments keep our body significantly warmer in winter than a single piece of dense cotton cloth of identical thickness? (A) Wool fibers actively generate chemical heat upon contact with human skin (B) Air is trapped in the pores between crimped wool fibers, and trapped air is a poor conductor of heat (C) Wool reflects incoming infrared light back towards the sun (D) Wool fibers conduct heat away from the skin into the surrounding air **Answer: B**
Q166. An iron rod at 40°C is dropped into an insulated container holding water at 40°C. In which direction will net thermal energy flow between the iron rod and the water? (A) Heat will flow from the iron rod to the water (B) Heat will flow from the water to the iron rod (C) There will be no net flow of heat between the iron rod and the water (D) Heat will continuously circulate in a loop without stopping **Answer: C**
Q167. What color change is observed when blue litmus paper is dipped into an aqueous solution of lemon juice? (A) Blue litmus paper turns red (B) Blue litmus paper turns deep green (C) Blue litmus paper turns bright yellow (D) Blue litmus paper remains blue without change **Answer: A**

Q168. What are the two principal products formed when an acid reacts with a base in a neutralization reaction? (A) Hydrogen gas and oxygen gas (B) Salt and water (C) Carbon dioxide and sodium metal (D) Ammonia and nitric acid **Answer: B**
Q169. When a few drops of phenolphthalein indicator solution are added to a test tube containing sodium hydroxide (NaOH) solution, what color appears? (A) Colorless (B) Bright pink (C) Dark blue (D) Brick red **Answer: B**
Q170. When an ant bites a person, it injects an acidic liquid that causes burning pain. Which acid is present in the ant sting, and which substance can be applied to neutralize it? (A) Formic acid; neutralized by applying moist baking soda (sodium hydrogen carbonate) (B) Oxalic acid; neutralized by applying vinegar (C) Lactic acid; neutralized by applying lemon juice (D) Hydrochloric acid; neutralized by applying common salt **Answer: A**
Q171. A yellow turmeric stain on a white cotton shirt turns reddish-brown when scrubbed with laundry soap. What does this observation indicate about the nature of soap solution? (A) Soap solution is acidic (B) Soap solution is neutral (C) Soap solution is basic (alkaline) (D) Soap solution is an organic bleach **Answer: C**
Q172. When agricultural soil becomes excessively acidic due to intensive use of chemical fertilizers, which chemical compound is commonly added to the fields by farmers to restore soil fertility? (A) Hydrochloric acid (B) Quicklime (calcium oxide) or slaked lime (calcium hydroxide) (C) Common salt (sodium chloride) (D) Citric acid crystals **Answer: B**
Q173. Which two essential substances must both be present in the environment for the rusting of iron to take place? (A) Nitrogen gas and pure sunlight (B) Oxygen (from air) and moisture (water vapor) (C) Carbon dioxide and dry hydrogen (D) Argon gas and soil minerals **Answer: B**
Q174. The industrial process of depositing a thin protective layer of metallic zinc onto iron to prevent rusting is known as what? (A) Crystallization (B) Galvanisation (C) Neutralization (D) Sedimentation **Answer: B**
Q175. When a clean strip of magnesium ribbon is ignited in air, it burns with a dazzling white flame to form a white powdery ash (X). When ash (X) is dissolved in water, what is the chemical nature of the resulting solution (Y)? (A) Acidic, turning blue litmus red (B) Basic, turning red litmus blue (C) Neutral, leaving both litmus papers unaffected (D) Insoluble, forming an oily organic film **Answer: B**
Q176. An iron nail is immersed in a blue solution of copper sulphate (CuSO4). After 30 minutes, what observable color changes occur in the solution and on the nail? (A) The solution turns green and a reddish-brown layer of copper deposits on the nail (B) The solution turns bright purple and the nail dissolves completely (C) The blue solution turns milky white and gas bubbles erupt violently (D) The solution remains bright blue with zero change on the nail surface **Answer: A**
Q177. Pure crystals of copper sulphate are obtained from an impure sample by dissolving it in boiling water containing dilute sulphuric acid and allowing the concentrated filtrate to cool undisturbed. Why is this crystallisation classified strictly as a physical change? (A) A new chemical compound with covalent bonds is synthesized (B) No new chemical substance is formed and the original salt can be recovered by dissolution (C) An irreversible gaseous byproduct is released during cooling (D) The oxidation state of copper changes permanently from +2 to 0 **Answer: B**
Q178. During rapid and strenuous sprinting, muscle cells experience temporary oxygen deficiency and break down glucose anaerobically. Which organic byproduct accumulates, causing muscle cramps? (A) Citric acid (B) Lactic acid (C) Hydrochloric acid (D) Acetic acid **Answer: B**
Q179. Insects such as cockroaches do not have hemoglobin or lungs. Through which specialized respiratory network of tubes do they exchange gases directly with tissues? (A) Pulmonary alveoli (B) Tracheae opening through spiracles (C) Moist vascular skin (D) Gill filaments **Answer: B**
Q180. During human inhalation (breathing in), what coordinated movements occur in the ribs and the muscular diaphragm? (A) Ribs move upwards and outwards while the diaphragm contracts and moves downwards (B) Ribs move downwards and inwards while the diaphragm relaxes and arches upwards (C) Ribs remain stationary while the diaphragm contracts upwards into the chest (D) Ribs move inwards while the diaphragm expands sideways **Answer: A**
Q181. When a student blows exhaled breath through a straw into freshly prepared lime water, the clear liquid turns milky. Which gas present in exhaled air causes this specific reaction? (A) Oxygen (B) Carbon dioxide (C) Nitrogen (D) Hydrogen **Answer: B**
Q182. How are the gills of a fish structurally adapted to extract dissolved oxygen efficiently from surrounding water? (A) Gills have a thick, chitinous shell that repels water molecules (B) Gills are composed of numerous thin feathery filaments densely supplied with blood capillaries (C) Gills contain internal air bladders that store gaseous oxygen for months (D) Gills rely on stomata pores that open only at night **Answer: B**
Q183. Which component of human blood contains the iron-bearing red pigment hemoglobin, which binds with oxygen to transport it to all body cells? (A) White blood cells (Leukocytes) (B) Blood platelets (Thrombocytes) (C) Red blood cells (Erythrocytes) (D) Blood plasma **Answer: C**
Q184. Why do human arteries possess thick, elastic muscular walls compared to veins? (A) Arteries carry deoxygenated blood sluggishly under low hydrostatic pressure (B) Arteries carry blood rapidly away from the pumping heart under high pulsatile pressure (C) Arteries contain internal bicuspid valves that require thick walls for support (D) Arteries absorb digested food directly from the peritoneal cavity **Answer: B**
Q185. When a cut or scrape occurs on the skin, bleeding normally stops after a few minutes due to the formation of a dark red clot. Which blood cells are responsible for initiating this clotting process? (A) Platelets (Thrombocytes) (B) Red blood cells (C) White blood cells (D) Lymphocytes **Answer: A**
Q186. Which plant vascular tissue is specifically responsible for conducting mainly water and dissolved salts unidirectionally upwards from roots to leaves? (A) Phloem (B) Xylem (C) Pith (D) Cortex **Answer: B**
Q187. What is the functional structural filtering unit of the human kidney that removes metabolic nitrogenous waste (urea) from the blood? (A) Neuron (B) Nephron (C) Alveolus (D) Hepatocyte **Answer: B**
Q188. In Bryophyllum, new plantlets develop vegetatively from plant buds situated in which part of the parent plant? (A) Root tips (B) Margins of mature leaves (C) Floral petals (D) Underground tuber core **Answer: B**
Q189. Which parts constitute the male reproductive organ (stamen) and the female reproductive organ (pistil) of a flowering plant respectively? (A) Stamen: Anther and Filament; Pistil: Stigma, Style, and Ovary (B) Stamen: Sepal and Petal; Pistil: Thalamus and Pedicel (C) Stamen: Stigma and Style; Pistil: Anther and Filament (D) Stamen: Ovule and Ovary; Pistil: Pollen sac and Filament **Answer: A**
Q190. What is the biological term for the cellular fusion of a male gamete with a female gamete inside the plant ovary? (A) Pollination (B) Fertilisation (C) Germination (D) Translocation **Answer: B**
Q191. Winged seeds that possess light, papery wing-like extensions, such as those of drumstick and maple, are naturally adapted for dispersal by which agent? (A) Water currents (B) Wind (C) Animals with sticky fur (D) Explosive fruit bursting **Answer: B**
Q192. A high-speed train travels a distance of 360 kilometers in exactly 4 hours. What is the average speed of the train expressed in SI units (meters per second)? (A) 90 m/s (B) 25 m/s (C) 100 m/s (D) 50 m/s **Answer: B**
Q193. A simple pendulum takes 32 seconds to complete 20 full oscillations. What is the time period of this pendulum? (A) 1.6 seconds (B) 0.625 seconds (C) 640 seconds (D) 3.2 seconds **Answer: A**
Q194. In a distance-time graph where time is plotted along the X-axis and distance along the Y-axis, a straight horizontal line parallel to the time axis indicates what state of motion for the object? (A) The object is moving at high uniform speed (B) The object is accelerating steadily (C) The object is stationary (at rest) (D) The object is moving backwards to its origin **Answer: C**
Q195. An electric safety fuse protects household electrical circuits from overcurrent by melting and breaking the circuit. What are the key material properties of a standard fuse wire? (A) High melting point and high resistance (B) Low melting point so it melts rapidly when excessive current flows (C) Immense tensile strength and zero resistance (D) Permanent magnetic susceptibility **Answer: B**
Q196. Who first discovered that an electric current flowing through a metallic conductor deflects a nearby magnetic compass needle? (A) Michael Faraday (B) Hans Christian Oersted (C) Isaac Newton (D) James Prescott Joule **Answer: B**
Q197. An electromagnet is constructed by tightly winding insulated copper wire around an iron nail. How can the magnetic strength of this electromagnet be increased? (A) By decreasing the number of wire turns and using a dead dry cell (B) By increasing the number of turns of the coil and increasing the electric current flowing through it (C) By replacing the iron core with a hollow glass tube (D) By cooling the wire in hot boiling water **Answer: B**
Q198. Why are convex mirrors universally installed as rear-view side mirrors in automobiles and motorcycles? (A) They form an inverted, magnified real image of trailing vehicles (B) They always form an erect, diminished virtual image and provide a much wider field of view (C) They focus distant parallel sun rays into a single blinding point (D) They absorb ultraviolet rays to prevent driver eye glare **Answer: B**
Q199. When a narrow beam of sunlight passes through a triangular glass prism, it splits into a rainbow band of seven distinct colors called a spectrum. What is this phenomenon called, and which color suffers the greatest deviation (bends the most)? (A) Reflection; Red bends the most (B) Dispersion; Violet bends the most (C) Polarization; Yellow bends the most (D) Diffraction; Green bends the most **Answer: B**
Q200. In a natural forest ecosystem, what is the crucial ecological role performed by microscopic decomposers such as bacteria and fungi living in the soil? (A) They compete with tree roots for moisture and nitrogen (B) They break down dead plant and animal tissues into dark organic nutrient-rich humus (C) They release toxic methane gas that prevents overgrowth of understorey herbs (D) They stop the evaporation of rain water by forming an impermeable plastic layer **Answer: B**
Q201. What specialized kidney-shaped or bean-shaped cells flank each microscopic stoma on a leaf surface and regulate its opening and closing? (A) Mesophyll cells (B) Guard cells (C) Epidermal hair cells (D) Collenchyma cells **Answer: B**
Q202. During oxygenic photosynthesis in green plants, which gas is consumed from the atmosphere and which gas is released as a vital byproduct? (A) Oxygen is consumed and nitrogen is released (B) Carbon dioxide is consumed and oxygen is released (C) Nitrogen is consumed and carbon dioxide is released (D) Water vapor is consumed and methane is released **Answer: B**
Q203. The immediate soluble sugar synthesized during photosynthesis is glucose. In which insoluble complex carbohydrate form do plants predominantly store excess food in leaves and tubers? (A) Cellulose (B) Starch (C) Sucrose (D) Oxygen **Answer: B**
Q204. Which chemical reagent is used to confirm the presence of starch in a de-pigmented green leaf after exposure to sunlight? (A) Dilute hydrochloric acid (B) Dilute iodine solution (C) Copper sulphate solution (D) Ammonium hydroxide solution **Answer: B**
Q205. Which of the following plants is insectivorous, using specialized sensitive leaves covered with sticky glandular tentacles to capture small insects? (A) Cuscuta (B) Drosera (Sundew) (C) Mistletoe (D) Spirogyra **Answer: B**
Q206. How do saprophytic fungi like common bread mould (Rhizopus) and mushrooms obtain nutrition from decaying organic matter? (A) They swallow solid organic debris whole into specialized stomachs (B) They secrete digestive juices externally onto dead matter and absorb the soluble nutrients (C) They capture sunlight using non-green photosynthetic pigments (D) They extract inorganic salts by penetrating living host cells with haustoria **Answer: B**
Q207. Which bacterium resides in the root nodules of leguminous plants like gram, pea, and beans to convert atmospheric nitrogen into usable water-soluble nitrates? (A) Lactobacillus (B) Rhizobium (C) Escherichia coli (D) Bacillus anthracis **Answer: B**
Q208. A student tests a variegated leaf of Croton (having green and white patches) for starch after 6 hours of bright sunlight. What will be observed upon adding iodine solution? (A) The entire leaf turns uniform blue-black (B) Only the green patches turn blue-black, while white non-green patches turn light brown (C) Only the white non-green patches turn blue-black (D) No part of the leaf changes color **Answer: B**
Q209. In Ganong's half-leaf experiment, one half of a destarched leaf is enclosed in a test tube containing potassium hydroxide (KOH) crystals. What is the specific chemical function of KOH in this setup? (A) To supply extra carbon dioxide to the leaf (B) To absorb carbon dioxide from the enclosed air inside the tube, creating a vacuum to absorb excess oxygen released by the leaf (D) To supply moisture to prevent the leaf from wilting **Answer: B**
Q210. Why do desert xerophytic plants like Opuntia (Cactus) modify their leaves into sharp spines and possess thick, green fleshy stems? (A) To increase water loss by accelerating stomatal transpiration (B) To minimize water loss through transpiration and perform photosynthesis via the stem (C) To absorb sunlight during cold desert nights exclusively (D) To trap subterranean insects for nitrogen absorption **Answer: B**
Q211. Why is Mistletoe categorized as a "partial parasite" rather than a total parasite like Cuscuta (Amarbel)? (A) It has green leaves and synthesizes its own carbohydrates, but absorbs water and minerals from the host tree (B) It produces flowers only during alternative years on the host trunk (C) It feeds exclusively on dead bark without harming host tissues (D) It absorbs organic food from the host while supplying water back to the host roots **Answer: A**
Q212. Photosynthesis directly synthesizes carbohydrates composed of carbon, hydrogen, and oxygen. How do plants synthesize nitrogen-rich proteins necessary for tissue growth? (A) They convert airborne nitrogen directly through their stomata using solar radiation (B) They absorb water-soluble inorganic nitrates from the soil via roots and combine them with carbohydrates (C) They break down stored starch molecules into amino acid monomers (D) They absorb organic proteins pre-formed in rainwater **Answer: B**
Q213. Slimy, green floating patches frequently observed in stagnant pond water are colonies of algae like Spirogyra. Why are these organisms classified as autotrophs? (A) They digest aquatic micro-organisms using external digestive enzymes (B) They contain chlorophyll and synthesize their own organic food via photosynthesis (C) They absorb dissolved sucrose directly from surrounding pond silt (D) They live in obligate parasitic symbiosis with pond fish scales **Answer: B**
Q214. What happens to the guard cells when water enters them from neighboring epidermal cells, and how does this affect the stomatal pore? (A) Guard cells shrink, their thin outer walls collapse, and the stomatal pore closes (B) Guard cells swell and curve outward because of their thick inner elastic walls, opening the pore (C) Guard cells divide rapidly, permanently sealing the stomatal aperture (D) Guard cells lose their nucleus, causing the stomatal pore to widen into a leaf vein **Answer: B**
Q215. Why do commercial horticulturists often grow crops like tomatoes and bell peppers inside greenhouses supplied with elevated carbon dioxide concentrations? (A) Elevated CO2 acts as an insecticide that kills leaf-eating caterpillars (B) Elevated CO2 acts as a limiting reactant that accelerates photosynthetic rate and increases fruit yield (C) Elevated CO2 prevents water from freezing during extreme summer heatwaves (D) Elevated CO2 eliminates the requirement for chlorophyll and sunlight **Answer: B**
Q216. Before conducting an experiment to prove that sunlight is essential for photosynthesis, why is a potted plant kept in complete darkness for 72 hours? (A) To destroy all chlorophyll pigments inside the chloroplasts (B) To completely consume all pre-existing starch stored inside the leaves (C) To induce the opening of all stomatal apertures permanently (D) To eliminate all fungal spores residing on the leaf cuticle **Answer: B**
Q217. Why is the Sun recognized as the ultimate primary source of energy for all living organisms on Earth, including obligate carnivores? (A) Carnivores warm their blood directly under sunlight to metabolize proteins (B) Solar energy captured by autotrophs during photosynthesis enters the food web and sustains herbivores and their predators (C) Sunlight decomposes organic soil minerals into soluble vitamins directly (D) Sunlight converts atmospheric nitrogen directly into meat proteins without plants **Answer: B**
Q218. Which of the following represents the correct chronological sequence of the five major steps involved in human holozoic nutrition? (A) Digestion! Ingestion! Assimilation! Absorption! Egestion (B) Ingestion! Digestion! Absorption! Assimilation! Egestion (C) Ingestion! Absorption! Digestion! Egestion! Assimilation (D) Absorption! Ingestion! Assimilation! Digestion! Egestion **Answer: B**
Q219. How many total canine teeth are present in the permanent dental set of an adult human, and what is their primary specialized mechanical function? (A) 8 canines, used for grinding tough cereal grains (B) 4 canines, used for piercing and tearing food (C) 12 canines, used for cutting soft bread and fruits (D) 2 canines, used for crushing fibrous vegetable stems **Answer: B**
Q220. When a piece of plain boiled rice is chewed continuously in the mouth for several minutes without swallowing, it begins to taste noticeably sweet. Why does this occur? (A) Saliva contains hydrochloric acid that hydrolyzes sucrose (B) Salivary amylase (ptyalin) breaks down tasteless starch into sweet maltose sugar (C) Teeth friction converts proteins directly into glucose crystals (D) The tongue secretes concentrated fruit fructose to lubricate the bolus **Answer: B**
Q221. What is the primary biological and chemical cause of tooth decay (dental caries) in humans? (A) Drinking alkaline water that dissolves tooth enamel (B) Bacteria acting on residual sugar deposits to produce acids that erode calcium enamel (C) Excessive chewing of raw fibrous vegetables that physically abrades the pulp (D) Deficiency of salivary enzymes that causes tooth pulp to calcify **Answer: B**
Q222. How is the swallowed food bolus moved downward through the oesophagus (food pipe) into the stomach, even when a person is lying down or hanging upside down? (A) Purely by gravitational free fall through a rigid open tube (B) By rhythmic, coordinated muscular contractions and relaxations called peristalsis (C) By high air pressure created in the lungs during normal exhalation (D) By continuous suction created by the hepatic portal vein **Answer: B**

Q223. The human stomach secretes concentrated hydrochloric acid (pH 1.5 to 2.5) to kill ingested microbes and activate pepsin. What prevents this strong acid from digesting the stomach's own muscular wall? (A) A dense layer of keratin scales covering the inner wall (B) A thick, protective alkaline mucus coating secreted by the inner stomach lining (C) Rapid neutralization of acid by continuously swallowed saliva (D) The stomach wall is composed exclusively of inorganic bone minerals **Answer: B**

Q224. Into which simple, absorbable end-products are dietary proteins, complex carbohydrates, and fats ultimately cleaved in the small intestine? (A) Proteins into amino acids; carbohydrates into glucose, and fats into fatty acids and glycerol (B) Proteins into starch, carbohydrates into fatty acids, and fats into amino acids (C) Proteins into glycogen, carbohydrates into amino acids, and fats into mineral salts (D) Proteins into lactic acid, carbohydrates into alcohol, and fats into carbon dioxide **Answer: A**

Q225. Pancreatic juice secreted by the pancreas into the duodenum contains which set of primary digestive enzymes? (A) Pepsin, rennin, and hydrochloric acid (B) Pancreatic amylase, trypsin, and pancreatic lipase (C) Salivary ptyalin, bile pigments, and mucin (D) Cellulase, maltase, and sulfuric acid **Answer: B**

Q226. What is the primary physiological function of the human large intestine (colon) regarding undigested food matter passing into it? (A) Secreting bile juice to digest remaining dietary proteins (B) Absorbing water and essential mineral salts, forming semi-solid feces (C) Grinding tough fibrous chunks using involuntary peristaltic teeth (D) Absorbing simple monosaccharides into lacteal vessels **Answer: B**

Q227. Which of the four stomach chambers in cud-chewing ruminants is known as the "true stomach" where chemical enzyme digestion occurs, analogous to the human stomach? (A) Rumen (B) Reticulum (C) Omasum (D) Abomasum **Answer: D**

Q228. Why can ruminants (such as cows, buffaloes, and deer) digest tough plant cellulose, whereas humans cannot digest cellulose at all? (A) Humans chew food too quickly, preventing physical grinding of cellulose fibers (B) Ruminants harbor specialized cellulase-digesting symbiotic bacteria and protozoa in their rumen/caecum (C) Humans lack canine teeth required to chemically cleave cellulose rings (D) Ruminant saliva contains hydrochloric acid at 10 times the strength of human gastric juice **Answer: B**

Q229. What is rumination (cud-chewing) in ruminant biology, and why is it brought back from the rumen into the mouth? (A) Undigested sand particles regurgitated for throat lubrication (B) Partially digested food that returns to the buccal cavity for thorough re-chewing (C) Concentrated stomach acid regurgitated to neutralize teeth (D) A pellet of dry grass stored under the tongue to absorb water **Answer: B**

Q230. In single-celled Amoeba, where does the chemical breakdown and digestion of ingested microscopic food particles take place? (A) Inside the contractile vacuole (B) Inside the temporary food vacuole (C) Directly across the external plasma membrane surface (D) Inside the central nucleus **Answer: B**

Q231. Bile juice contains no digestive enzymes. How does it play a crucial role in the digestion of dietary lipids in the duodenum? (A) It breaks triglycerides into glycerol via acid hydrolysis (B) It emulsifies large insoluble fat globules into minute droplets and provides an alkaline medium for pancreatic lipase (C) It solidifies liquid cooking oils into insoluble waxes to be egested (D) It binds directly to carbohydrates to prevent their absorption **Answer: B**

Q232. Which structural feature of the finger-like villi lining the small intestine facilitates rapid absorption of digested nutrients into the circulatory system? (A) A dense network of fine blood capillaries and lacteals covered by a single-cell-thick epithelium (B) Thick, muscular walls that grind food particles like miniature molars (C) Ciliated surfaces that sweep undigested cellulose directly into the kidneys (D) A heavy keratinized crust that prevents water from exiting into the bloodstream **Answer: A**

Q233. How does the tentacular Paramecium capture food particles from surrounding pond water, in contrast to Amoeba using pseudopodia? (A) By projecting temporary gelatinous tentacles from its dorsal surface (B) By coordinated rhythmic beating of cilia that sweeps food into a definite oral groove (cytostome) (C) By releasing sticky venomous droplets to paralyze microscopic rotifers (D) By crawling actively using flagellar suction cups **Answer: B**

Q234. Why is Oral Rehydration Solution (ORS), containing clean boiled water, a pinch of salt, and sugar, administered immediately to patients suffering from severe diarrhea? (A) To kill all bacteria residing inside the stomach by inducing vomiting (B) To rapidly replenish water, sodium, and glucose lost from body tissues and prevent fatal dehydration (C) To coat the oesophagus with an impermeable protective oil layer (D) To supply extra dietary fiber to solidify loose bowel movements **Answer: B**

Q235. Why must a laboratory thermometer be read while its bulb is still immersed in the liquid being measured, unlike a clinical thermometer? (A) Laboratory thermometers have dark glass that is opaque outside liquids (B) Laboratory thermometers lack a constriction (kink), so the mercury level drops immediately upon removal (C) Laboratory thermometers use colored alcohol that evaporates instantly in ambient air (D) Laboratory thermometers require hydraulic pressure from the liquid to maintain mercury height **Answer: B**

Q236. Through which process is thermal energy transferred along a solid metal spoon placed in a hot bowl of soup, where particles vibrate and transfer energy without moving from their positions? (A) Convection (B) Conduction (C) Radiation (D) Sublimation **Answer: B**

Q237. Which of the following materials is a poor conductor of heat (thermal insulator), making it suitable for manufacturing handles of cooking pans? (A) Copper (B) Bakelite (hard plastic) (C) Aluminium (D) Cast iron **Answer: B**

Q238. Why are the heating elements in electric water geysers and electric immersion kettles always installed near the bottom of the container? (A) To prevent water vapor from condensing on the electric plug (B) Because heated water expands, becomes less dense, rises, setting up convective currents that heat the entire volume (C) Because conduction in liquids occurs only downwards toward cold sediments (D) To reduce the electric voltage consumed by the heating coil **Answer: B**

Q239. Why is wearing two thin woollen sweaters noticeably warmer on a freezing winter day than wearing a single sweater of twice the thickness? (A) Two sweaters generate friction that creates continuous electric heat (B) A layer of still air is trapped between the two sweaters, and trapped air is a very poor conductor of heat (C) Two sweaters block atmospheric gravity from cooling body tissues (D) Two sweaters reflect solar ultraviolet rays back into the body **Answer: B**

Q240. How does radiant thermal energy from the Sun reach the surface of the Earth across millions of kilometers of empty vacuum space? (A) By conduction through cosmic dust clouds (B) By convection currents of atmospheric gases stretching to the Sun (C) By thermal radiation, which does not require any material medium for propagation (D) By high-speed sound waves reflected off lunar orbital rings **Answer: C**

Q241. Two identical tin cans, Can X painted glossy black and Can Y painted shiny white, each contain 200 mL of water at 80°C. If placed in a shaded room at 25°C, what will happen to their temperatures? (A) Both cans cool down at exactly the same rate (B) Can X cools faster because black surfaces are better thermal radiators than white surfaces (C) Can Y cools faster because white surfaces radiate heat twice as effectively as dark surfaces (D) Neither can cools down because heat requires sunlight to escape **Answer: B**

Q242. At night in coastal areas, why does the wind blow from the land toward the sea (land breeze)? (A) Land warms up much faster than seawater at night due to lunar gravity (B) Land cools down faster than water; the warmer air over the sea rises, and cooler air from land moves in (C) Ocean waves physically push air masses inland during high tides exclusively (D) Evaporation of seawater creates a vacuum that pulls air off coastal mountain ranges **Answer: B**

Q243. In a vacuum flask (Thermos), how do the double glass walls with the evacuated space between them prevent thermal energy transfer? (A) They eliminate heat transfer by conduction and convection, which both require a material medium (B) They prevent heat transfer by radiation exclusively (C) They convert infrared heat waves into visible blue light rays (D) They generate a magnetic shield that freezes ambient air particles **Answer: A**

Q244. Why are the inner surfaces of the glass walls of a vacuum flask coated with a highly reflective silver mirror layer? (A) To reflect radiant heat waves back into the flask, minimizing loss by thermal radiation (B) To stop convective air currents from leaking out of the plastic stopper (C) To prevent liquid acids from reacting with the glass silica matrix (D) To increase the electrical conductivity of the insulating casing **Answer: A**

Q245. A copper cylinder at 50°C is dropped into an insulated vessel containing water at 50°C. In which direction will net heat flow occur? (A) From the copper cylinder into the water because metals hold more heat (B) From the water into the copper cylinder because water has higher density (C) No net heat will flow between the copper cylinder and the water (D) Heat will circulate continuously from copper to water and back without stopping **Answer: C**

Q246. What are the two standard fixed reference points on the Celsius temperature scale, calibrated at standard atmospheric pressure? (A) The freezing point of alcohol (-114°C) and the boiling point of mercury (357°C) (B) The melting point of pure ice (0°C) and the boiling point of pure water (100°C) (C) Human core body temperature (37°C) and the boiling point of salt water (108°C) (D) Absolute zero (-273°C) and the freezing point of liquid nitrogen (-196°C) **Answer: B**

Q247. Why are modern electronic digital thermometers increasingly preferred over traditional mercury-in-glass clinical thermometers in hospitals and homes? (A) Digital thermometers do not require batteries or electronic power (B) Mercury is a toxic, hazardous heavy metal that is difficult to dispose of safely in the glass bulb shatters (C) Glass thermometers cannot measure temperatures higher than 20°C (D) Mercury reacts with human saliva to form poisonous chlorine gas **Answer: B**

Q248. During a bright sunny afternoon, how does ambient air above the ground primarily become heated? (A) Direct absorption of solar radiation by oxygen molecules before sunlight reaches the soil (B) The ground absorbs solar radiation first, becomes hot, and warms the adjacent air layer by conduction and convection (C) Cosmic rays directly ionize nitrogen molecules in the lower troposphere (D) Volcanic vents release subterranean steam that heats ambient air uniformly **Answer: B**

Q249. Why is the capillary bore inside a glass thermometer made extremely narrow? (A) To prevent liquid mercury from freezing during winter measurements (B) To make small volume changes in the bulb produce a large, easily readable movement along the capillary scale (C) To increase the glass breaking strength under high pressure (D) To stop air bubbles from dissolving in the liquid metal **Answer: B**

Q250. Why are room ventilators and exhaust fan outlets always constructed near the ceiling, while room heaters are placed close to the floor? (A) Warm exhaled air is lighter and ascends toward the ceiling to escape, while cold fresh air enters through lower doors and windows (B) To keep building roofs cool from accumulating solar infrared energy (C) Ceiling plaster radiates magnetic waves that attract oxygen molecules upward (D) To ensure exhaust fan blades are out of reach of household pets **Answer: A**

Q251. From which symbiotic organism is the natural chemical indicator litmus usually extracted, and what is its natural color in pure distilled water? (A) Yeast; natural color is emerald green (B) Lichens; natural color is purple (mauve) (C) Spirogyra; natural color is bright yellow (D) Mushroom; natural color is colorless **Answer: B**

Q252. What pH transitions does warm water extract of China rose (Hibiscus petals) display when tested with acidic and basic test solutions? (A) Turns dark pink (magenta) in acidic solutions and green in basic solutions (B) Turns yellow in acidic solutions and bright red in basic solutions (C) Turns blue in acidic solutions and colorless in basic solutions (D) Remains pale pink in acidic solutions and turns black in basic solutions **Answer: A**

Q253. How does synthetic phenolphthalein indicator behave when added to an acidic solution versus an alkaline (basic) solution? (A) It remains colorless in acidic solution and turns dark blue in basic solution (B) It remains completely colorless in acidic solution and turns deep pink in basic solution (C) It turns red in acidic solution and green in basic solution (D) It forms a white precipitate in acidic solution and turns orange in basic solution **Answer: B**

Q254. What happens during a chemical neutralization reaction between hydrochloric acid and sodium hydroxide solution? (A) Only hydrogen gas is produced and the temperature of the beaker drops drastically (B) Sodium chloride salt and water are formed, and heat is usually evolved (C) Sodium metal settles as a shiny precipitate with zero temperature change (D) Chlorine gas explodes and acidic vinegar fumes fill the container **Answer: B**

Q255. Why is an antacid tablet containing milk of magnesia (magnesium hydroxide, $Mg(OH)_2$) prescribed to relieve painful acidity in the human stomach? (A) Magnesium hydroxide acts as a mild base that neutralizes excessive hydrochloric acid secreted by gastric glands (B) Magnesium hydroxide coats the stomach with strong sulfuric acid to kill all bacteria (C) Magnesium oxide stops the body cells from absorbing dietary proteins (D) Magnesium hydroxide solidifies all stomach liquids into insoluble calcium chalk **Answer: A**

Q256. When an ant bites, it injects acidic formic acid (methanoic acid) into the skin. Which common household chemical can be applied to soothe the stinging skin irritation? (A) Concentrated vinegar (acetic acid) (B) Moist baking soda (sodium hydrogen carbonate) or calamine lotion (C) Pure lemon juice (citric acid) (D) Dilute hydrochloric acid **Answer: B**

Q257. When agricultural soil becomes excessively basic due to inappropriate fertilizer use, how do farmers treat it to restore optimal fertility for plant growth? (A) By adding quicklime (calcium oxide) (B) By adding organic manure (compost) (C) By adding slaked lime (calcium hydroxide) (D) By flooding the field with concentrated washing soda **Answer: B**

Q258. Why must industrial factory effluents be chemically treated with basic substances before being discharged into natural rivers and lakes? (A) Factory wastes are naturally strongly basic and need more bases to precipitate metals (B) Factory effluents often contain harmful dissolved acids that would kill fish and aquatic life (C) Basic substances turn wastewater into drinking milk for aquatic herbivores (D) To increase the boiling point of the river water during cold winters **Answer: B**

Q259. If blue litmus paper is held over dry hydrogen chloride (HCl) gas, and no color change occurs. However, when moistened blue litmus paper is exposed to the same gas, it immediately turns red. What does this demonstrate? (A) Acids show acidic properties only in the presence of water because they release hydrogen ions (H^+) (B) Water acts as a strong chemical base that changes litmus color (C) Dry hydrogen chloride gas is an alkaline gas until it touches cellulose fibers (D) Moisture destroys the dye molecules in red litmus paper permanently **Answer: A**

Q260. Which of the following correctly pairs a common dietary food item with its predominant naturally occurring organic acid? (A) Curd — Lactic acid; Vinegar — Acetic acid; Tamarind — Tartaric acid (B) Curd — Citric acid; Vinegar — Nitric acid; Tamarind — Formic acid (C) Curd — Boric acid; Vinegar — Tartaric acid; Tamarind — Lactic acid (D) Curd — Sulfuric acid; Vinegar — Lactic acid; Tamarind — Citric acid **Answer: A**

Q261. What is the specific scientific definition of an "alkali" in chemistry? (A) Any corrosive liquid that produces hydrogen gas with copper (B) A base that is readily soluble in water (C) A neutral salt that does not affect any litmus paper (D) An organic acid extracted from citrus fruit rinds **Answer: B**

Q262. Why does acid rain cause visible deterioration ("marble cancer") on historical monuments like the Taj Mahal built of white marble (calcium carbonate)? (A) Sulfuric acid in acid rain reacts chemically with calcium carbonate to form soluble calcium sulfate and carbon dioxide (B) Acid rain freezes inside marble pores, expanding mechanically like glaciers (C) Nitric acid in rain acts as a black pigment that stains marble permanently (D) Acid rain stimulates algae that consume calcium atoms directly for photosynthesis **Answer: A**

Q263. A sample of pure distilled water is tested with both red litmus paper and blue litmus paper. What color changes occur? (A) Red litmus turns blue; blue litmus remains unchanged (B) Blue litmus turns red; red litmus remains unchanged (C) Neither red litmus nor blue litmus changes color (D) Both litmus papers bleach completely white within five seconds **Answer: C**

Q264. When turmeric indicator paste is applied to an unknown clear liquid X, the yellow color turns deep reddish-brown. When applied to clear liquid Y, it stays bright yellow. What can be concluded about liquids X and Y? (A) Liquid X is acidic and Liquid Y is basic (B) Liquid X is basic (alkaline), while Liquid Y is neutral or acidic (C) Liquid X is pure distilled water and Liquid Y is strong sulfuric acid (D) Both Liquid X and Liquid Y are concentrated neutral salts **Answer: B**

Q265. A honeybee sting is acidic, whereas a wasp sting is alkaline. Which household substances should typically be applied to treat a honeybee sting and a wasp sting, respectively? (A) Honeybee sting: Baking soda (base); Wasp sting: Vinegar (dilute acid) (B) Honeybee sting: Lemon juice (acid); Wasp sting: Lime water (base) (C) Honeybee sting: Hydrochloric acid; Wasp sting: Caustic soda (D) Both stings should be treated with concentrated sulfuric acid **Answer: A**

Q266. When an aqueous solution of sodium chloride (table salt) is prepared, what is its nature, and why does it have no effect on either litmus paper? (A) It is a neutral salt formed by the neutralization of strong acid (HCl) with a strong base (NaOH) (B) It is an acidic salt because sodium is an active explosive metal (C) It is a basic salt because chlorine is an alkaline halogen gas (D) It is an organic salt that destroys the cellulose fibers of litmus paper **Answer: A**

Q267. In an experiment, 20 mL dilute hydrochloric acid and 20 mL of dilute sodium hydroxide solution (both initially at 25°C) are mixed in an insulated cup. The thermometer reading jumps to 32°C. Why did the temperature rise? (A) The thermometer bulb cracked due to electrical shock from sodium ions (B) Neutralization is an exothermic reaction that releases chemical bond energy as heat (C) Water molecules synthesized during the reaction absorbed latent heat from the atmosphere (D) Hydrochloric acid boiled and evaporated spontaneously upon contact with plastic **Answer: B**

Q268. Which of the following statements correctly identifies a fundamental hallmark of all physical changes? (A) New chemical substances with distinct molecular formulas are always produced (B) Only physical properties (such as shape, size, physical state, or texture) change, with no new substance formed (C) Permanent chemical bonds are irreversibly broken and reformed (D) Large amounts of heat and light are always released with explosive sound **Answer: B**

Q269. When a clean strip of magnesium ribbon is burned in air, a dazzling white flame produces white ash X. When ash X is dissolved in water, solution Y is formed. What are X and Y? (A) X is Magnesium oxide (MgO); Y is Magnesium hydroxide ($Mg(OH)_2$) which turns red litmus blue (B) X is Magnesium chloride ($MgCl_2$); Y is Hydrochloric acid (HCl), which turns blue litmus red (C) X is Magnesium carbonate ($MgCO_3$); Y is Carbonic acid, which is neutral to litmus (D) X is pure Carbon ash; Y is pure water **Answer: A**

Q270. When a clean iron nail is placed in a blue copper sulphate solution, the solution gradually turns pale green and a reddish-brown coating forms on the nail. What chemical change has occurred? (A) Iron reacts with water to form blue iron rust while copper evaporates as gas (B) Iron displaces copper from copper sulphate, forming green ferrous sulphate and depositing copper metal on the nail (C) Copper sulphate decomposes into sulfur dioxide gas while iron melts physically (D) Iron dissolves completely into oxygen bubbles with zero chemical change **Answer: B**

Q271. When carbon dioxide gas is bubbled into freshly prepared lime water (calcium hydroxide, $Ca(OH)_2$), why does the solution turn milky white? (A) Due to the formation of an insoluble white precipitate of calcium carbonate ($CaCO_3$) (B) Due to the condensation of microscopic milk droplets from the carbon dioxide (C) Due to the rapid formation of soluble calcium bicarbonate crystals (D) Due to the bleaching action of dissolved oxygen gas **Answer: A**

Q272. When a wax candle burns, two distinct changes occur simultaneously. Which option correctly identifies each change? (A) Melting of wax is a physical change; combustion of wax vapor producing CO_2 and water is a chemical change (B) Melting of wax is a chemical change; glowing of the wick is a biological change (C) Both melting and burning of wax are reversible physical changes (D) Both melting and burning of wax are irreversible nuclear changes **Answer: A**

Q273. In an experiment, three clean iron nails are placed in three sealed test tubes: Tube 1 with dry air and anhydrous calcium chloride; Tube 2 with boiled, de-oxygenated water covered with an oil layer; Tube 3 with tap water exposed to air. In which tube(s) will rusting occur? (A) Tubes 1 and 2 only (B) Tube 3 only (C) Tubes 2 and 3 only (D) All three tubes equally **Answer: B**

Q274. What is the industrial process of depositing a thin, protective layer of metallic zinc onto iron objects to prevent rusting called? (A) Crystallization (B) Galvanization (C) Neutralization (D) Pasteurization **Answer: B**

Q275. Why is the crystallization of copper sulphate from an impure solution categorized as a physical change rather than a chemical change? (A) It converts copper atoms into brand new zinc atoms (B) The chemical composition of copper sulphate remains identical; only its physical state changes from dissolved solute to geometric solid crystals (C) It produces explosive flames and releases chlorine gas (D) It requires an electric current to decompose the solvent permanently **Answer: B**

Q276. How is corrosion-resistant stainless steel manufactured from iron so that it does not rust even when exposed to water and atmospheric air? (A) By dipping iron into boiling sugar syrup for 48 hours (B) By alloying molten iron with carbon and metals such as chromium, nickel, and manganese (C) By coating iron with a thick layer of wet red clay (D) By passing high-voltage direct current through pure iron bars underwater **Answer: B**

Q277. When cold water is added to white quicklime (calcium oxide, CaO) in a beaker, vigorous hissing occurs and the beaker becomes boiling hot. What type of change is this? (A) An endothermic physical change that absorbs heat from the surrounding air (B) An exothermic chemical change in which calcium oxide reacts with water to form calcium hydroxide (slaked lime, $Ca(OH)_2$) (C) A reversible physical dissolution similar to dissolving sugar in tea (D) A biological change mediated by heat-loving bacteria **Answer: B**

Q278. Why is the natural ripening of a green mango on a tree classified as an irreversible chemical change? (A) The mango merely changes its physical shape without altering its taste (B) Complex insoluble starches and sour acids are enzymatically converted into sweet fructose, aromatic esters, and new pigments that cannot be reversed (C) Water inside the fruit evaporates physically into cloud droplets (D) The fruit skin becomes magnetized under solar ultraviolet rays **Answer: B**

Q279. Why cannot curd (yogurt) be turned back into liquid milk by any physical separation technique? (A) Curd is frozen milk that requires extreme boiling to melt (B) Lactobacillus bacteria have chemically fermented milk lactose sugar into lactic acid, coagulating casein proteins into a permanently altered product (C) The fat molecules have evaporated into the atmosphere (D) Curd contains dissolved iron that destroys milk vitamins permanently **Answer: B**

Q280. When baking soda (sodium hydrogen carbonate) is mixed with kitchen vinegar (dilute acetic acid), brisk effervescence is observed with a hissing sound. Which gas is liberated? (A) Oxygen gas (B) Carbon dioxide gas (C) Hydrogen gas (D) Nitrogen dioxide gas **Answer: B**

Q281. Which set of observable phenomena during the explosion of a fireworks rocket confirms that a rapid chemical change is taking place? (A) Evolution of heat, bright light, acoustic sound, and unpleasant smelling gases; veins accompanied by the formation of new chemical residues (B) Temporary change in shape that reverts immediately upon cooling (C) The rocket powder turns into liquid ice that melts at 0°C (D) Zero release of thermal energy or light with 100% mass destruction **Answer: A**

Q282. Why do cargo ships constructed of heavy steel plates rust significantly faster in coastal ocean seawater than in inland freshwater rivers? (A) Seawater contains dissolved salts (electrolytes) that accelerate the electrochemical process of rusting (B) Ocean waves physically abrade the iron into molecular powder (C) River water contains zero dissolved oxygen for aquatic respiration (D) Seawater is colder than river water, freezing the metal surface **Answer: A**

Q283. When solid camphor or ammonium chloride is heated in a china dish covered with an inverted glass funnel, it transitions directly into vapor without becoming liquid. What type of change is this, and why? (A) A chemical change because white vapor is an entirely new synthetic polymer (B) A reversible physical change called sublimation, where cooling the vapor deposits the original solid substance unchanged (C) An irreversible nuclear decomposition (D) A biological germination change **Answer: B**

Q284. What are the three end products of complete aerobic cellular respiration when glucose is broken down in the presence of oxygen inside mitochondria? (A) Lactic acid, ethanol, and carbon dioxide (B) Carbon dioxide, water, and energy (ATP) (C) Glucose, oxygen, and hydrogen gas (D) Methane, urea, and heat energy only **Answer: B**

Q285. During anaerobic fermentation, single-celled yeast organisms break down glucose without oxygen. What are the resulting chemical products, making yeast valuable in baking and brewing? (A) Lactic acid and water (B) Ethyl alcohol (ethanol), carbon dioxide, and energy (C) Hydrochloric acid and nitrogen gas (D) Oxygen gas and solid starch crystals **Answer: B**

Q286. During intense and rapid sprinting, muscle cells experience temporary oxygen deficiency. Through which pathway do they generate rapid energy, and what byproduct accumulates to cause painful cramps? (A) Glucose breaks down into ethanol, accumulating in joints (B) Glucose breaks down anaerobically into lactic acid, which accumulates in muscle tissue (C) Proteins convert directly into uric acid crystals (D) Fatty acids freeze into solid waxes inside capillary walls **Answer: B**

Q287. Why does taking a warm water bath or receiving a gentle massage provide fast relief from muscle cramps after heavy physical exercise? (A) It chills muscle cells to freeze lactic acid production (B) It improves blood circulation, increasing oxygen delivery to muscle cells to fully oxidize accumulated lactic acid into carbon dioxide and water (C) It draws lactic acid out through skin pores by magnetic attraction (D) It stops cellular respiration completely for thirty minutes **Answer: B**

Q288. What is the typical average breathing rate of a healthy adult human at complete physical rest, and what happens to this rate during vigorous exercise? (A) Rest: 15–18 breaths/min; rises to 25 or more breaths/min during vigorous exercise (B) Rest: 4–8 breaths/min; drops to 1 breath/min during vigorous exercise (C) Rest: 80–85 breaths/min; remains constant at 72 breaths/min always (D) Rest: 100–120 breaths/min; drops to zero during running **Answer: A**

Q289. During human inhalation (breathing in), what coordinated movements of the rib cage and muscular diaphragm expand the thoracic (chest) cavity? (A) Ribs move downwards and inwards; diaphragm curves upward into a dome shape (B) Ribs move upwards and outwards; diaphragm contracts and flattens downwards (C) Ribs remain locked; diaphragm vibrates rapidly like a drumskin (D) Ribs rotate 90 degrees; diaphragm exits the thoracic cage **Answer: B**

Q290. What occurs mechanically inside the thoracic cavity during normal quiet exhalation (breathing out)? (A) The diaphragm downward into pushes deeper into the abdominal cavity (B) The ribs move downwards and inwards, while the diaphragm relaxes and curves upward into its dome shape (C) The lungs expand to twice their volume, pulling atmospheric air out of the throat (D) The trachea closes permanently to stop gas exchange **Answer: B**

Q291. How does the volumetric percentage of oxygen and carbon dioxide compare between freshly inhaled atmospheric air and exhaled alveolar air in humans? (A) Inhaled: 21% O_2, 0.04% CO_2; Exhaled: ~16.4% O_2, ~4.4% CO_2 (B) Inhaled: 0% O_2, 100% CO_2; Exhaled: 100% O_2, 0% CO_2 (C) Inhaled: 78% O_2, 21% CO_2; Exhaled: 21% O_2, 78% CO_2 (D) Inhaled: 50% O_2, 50% CO_2; Exhaled: 10% O_2, 90% CO_2 **Answer: A**

Q292. Why must the outer skin of an earthworm remain continuously moist and slimy for the animal to survive? (A) To reflect solar infrared radiation and prevent overheating (B) Earthworms lack lungs and breathe entirely by cutaneous diffusion of oxygen and carbon dioxide through their moist skin into blood capillaries (C) To produce magnetic slime trails that guide other earthworms underground (D) To digest soil grains externally before swallowing them into the pharynx **Answer: B**

Q293. In terrestrial insects like cockroaches, how does atmospheric oxygen reach individual internal body cells without being transported via blood vessels? (A) Through microscopic gills located behind their compound eyes (B) Through lateral body openings called spiracles connected to an internal branching network of air tubes (tracheae) (C) Through moist mouthparts that swallow pure air into the crop (D) Through tiny suction cups on their foot pads **Answer: B**

Q294. How do the gills of bony fish extract dissolved oxygen from water efficiently, even though water contains less than 1% dissolved oxygen by volume? (A) Fish swallow water into their stomach where gastric acid decomposes water molecules into elemental oxygen (B) Water taken in through the mouth flows over thin, richly vascularized gill filaments where dissolved oxygen diffuses across capillaries (C) Fish blow bubbles onto the surface to trap atmospheric nitrogen (D) Gills freeze surrounding water to release oxygen gas bubbles into the swim bladder **Answer: B**

Q295. Which respiratory organs do adult amphibians like frogs utilize when respiring in water versus when active on dry land? (A) In water: moist skin (cutaneous respiration); On land: lungs (pulmonary respiration) and moist buccopharyngeal cavity (B) In water: spiracles; On land: external feathery gills (C) In water: trachea; On land: kidneys (D) In water: lungs exclusively; On land: skin exclusively **Answer: A**

Q296. Why do potted agricultural plants rapidly wither and die if the soil is continuously waterlogged for several days? (A) Water fills all the microscopic air spaces between soil particles, depriving root cells of oxygen needed for cellular respiration (B) Water dissolves all root cell walls by chemical hydrolysis (C) Excessive water converts soil minerals into poisonous chlorine gas (D) Roots require complete dryness to synthesize chloroplasts **Answer: A**

Q297. When germinating pea seeds are placed in a closed thermos flask fitted with a thermometer, the temperature rises by 3°C to 5°C over 24 hours. What biological process explains this temperature rise? (A) Active photosynthesis occurring in the dark (B) Rapid cellular respiration breaking down stored food to provide metabolic energy for embryonic growth, releasing waste heat (C) Nuclear decay of seed coat minerals (D) Frictional heat produced by root elongation against the cotton plug **Answer: B**

Q298. Why do aquatic mammals like whales and dolphins frequently surface to blow a fountain of spray into the air, instead of remaining submerged permanently like sharks? (A) They possess lungs rather than gills, requiring them to inhale atmospheric air through dorsal blowholes (B) They surface exclusively to warm their blubber under solar ultraviolet rays (C) They drink surface freshwater to neutralize ocean salt (D) They blow water to frighten away surface seabirds **Answer: A**

Q299. What is the physiological purpose of the involuntary explosive sneeze reflex when foreign dust, pollen, or pepper particles enter the nasal passage? (A) To force airborne particles deeper into the pulmonary alveoli for digestion (B) To expel irritating foreign particles from the sensitive nasal cavity and keep the respiratory tract clean (C) To generate heat that burns nasal viruses instantly (D) To equalize air pressure between the stomach and the middle ear **Answer: B**

Q300. During nighttime in a forest when photosynthesis is zero due to lack of sunlight, what net gas exchange occurs between green trees and the surrounding atmosphere? (A) Trees absorb carbon dioxide and release oxygen (B) Trees absorb oxygen and release carbon dioxide through cellular respiration (C) Trees absorb nitrogen and release helium gas (D) Net gas exchange ceases completely in all plant tissues **Answer: B**

Q301. Which component of human blood forms the pale straw-colored fluid matrix that suspends blood cells and transports dissolved food, carbon dioxide, and hormones? (A) Hemoglobin (B) Blood plasma (C) Platelets (D) Myoglobin **Answer: B**

Q302. What is the primary immunological function of white blood cells (leukocytes) circulating in the human bloodstream? (A) Transporting oxygen molecules to skeletal muscles (B) Engulfing and destroying invading pathogens and producing protective antibodies (C) Synthesizing digestive enzymes for the small intestine (D) Accelerating blood clotting by releasing mineral calcium crystals **Answer: B**

Q303. When a minor laceration or cut occurs on the skin, bleeding spontaneously halts after a few minutes due to the formation of a dark red scab. Which blood cells initiate this life-saving process? (A) Red blood cells (Erythrocytes) (B) Blood platelets (Thrombocytes) (C) Eosinophils (D) Basophils **Answer: B**

Q304. Why do human arteries possess thick, highly elastic muscular walls, whereas veins possess thinner walls with internal semilunar valves? (A) Arteries carry blood away from the pumping ventricles under high, pulsating pressure; veins carry blood under low pressure and valves prevent backward flow (B) Arteries carry cold blood that shrinks vessels; veins carry boiling blood (C) Arteries absorb atmospheric oxygen directly across their muscular walls (D) Veins must withstand high pressure directly generated by the kidneys **Answer: A**

Q305. Most arteries carry oxygen-rich blood, and most veins carry carbon dioxide-rich blood. Which two blood vessels are the classic exceptions to this rule? (A) Renal artery and Renal vein (B) Pulmonary artery (carries deoxygenated blood) and Pulmonary vein (carries oxygenated blood) (C) Hepatic artery and Hepatic portal vein (D) Carotid artery and Jugular vein **Answer: B**

Q306. Through which microscopic blood vessels, possessing walls made of only a single layer of endothelial cells, does the actual exchange of nutrients, gases, and cellular wastes occur? (A) Aorta (B) Capillaries (C) Vena cava (D) Pulmonary trunk **Answer: B**

Q307. When an examiner places their fingertips gently on the inner wrist of a person, a rhythmic throbbing called the pulse is felt. What causes this throbbing sensation? (A) Air bubbles travelling through subcutaneous lymphatic channels (B) Surges of blood flowing through the radial artery generated by ventricular contractions of the heart (C) Twitching of the flexor wrist tendons due to nerve fatigue (D) Peristalsis in the forearm muscles **Answer: B**

Q308. What is the vital physiological advantage of the muscular partition (septum) that completely divides the human heart into right and left halves? (A) It prevents the mixing of oxygen-rich blood with carbon dioxide-rich blood, ensuring efficient oxygen delivery for high metabolism (B) It allows blood to freeze into crystals inside the right atrium (C) It generates electric pulses that replace nerve signals entirely (D) It stores extra red blood cells for deep sea diving **Answer: A**

Q309. Which of the following correctly traces the anatomical path of urine from its site of formation to its excretion from the human body? (A) Urinary bladder! Kidneys! Ureters! Urethra! Ureters (B) Kidneys! Ureters! Urinary bladder! Urethra! Kidneys! Ureters! Urinary bladder! Ureters (D) Ureters! Kidneys! Urethra! Urinary bladder **Answer: B**

Q310. When a patient experiences acute or chronic renal (kidney) failure, what medical technology is used periodically to filter toxic metabolic wastes like urea from the blood? (A) Electrocardiogram (ECG) (B) Hemodialysis (Dialysis machine) (C) Ultrasound sonography (D) Stethoscope amplification **Answer: B**

Q311. During hot summer days, the human body produces abundant watery sweat from sweat glands. How does sweating cool down the body temperature effectively? (A) Sweat dissolves skin fats to allow cold wind to penetrate into veins (B) Water in sweat absorbs latent heat of vaporization from the body surface as it evaporates, cooling the skin (C) Sweating chemically converts skin cells into cooling ice crystals (D) Sweat reflects 100% of solar radiation like a mirror **Answer: B**

Q312. Through which specialized vascular tissue do tall trees transport water and dissolved inorganic soil minerals upwards from the roots to the leaves? (A) Phloem parenchyma (B) Xylem vessels and tracheids (C) Cortex collenchyma (D) Pith sclerenchyma **Answer: B**

Q313. What is the biological process of transporting soluble organic food products (sucrose and amino acids) synthesized in green leaves to non-photosynthetic roots, fruits, seed buds, and which tissue performs it? (A) Transpiration via Xylem (B) Translocation via Phloem (C) Imbibition via Epidermis (D) Evaporation via Cuticle **Answer: B**

Q314. How can towering redwood and eucalyptus trees over 90 meters tall pull water from soil up to their highest leaves without any mechanical pump? (A) Continuous evaporation of water vapor from leaf stomata generates a negative pressure suction force (transpiration pull) (B) Atmospheric air pressure pushes water up through the bark like a piston (C) Rainwater sinking down the stem draws underground water upwards by gravity (D) Earth's magnetic field repels water molecules upwards into foliage **Answer: A**

Q315. Why is the human circulatory system classified as a "double circulation" system? (A) Blood flows through two parallel pairs of hearts beating alternately (B) Blood passes through the heart twice during one complete circuit of the body (pulmonary circuit and systemic circuit) (C) Blood contains twice as many red blood cells as white blood cells (D) Each blood vessel has two separate lumens for arterial and venous blood **Answer: B**

Q316. How are unicellular root hairs anatomically specialized to maximize the absorption of water and dissolved minerals from interstitial soil moisture? (A) They have thick waterproof cuticles that stop water from leaking out (B) They form millions of microscopic cytoplasmic extensions that enormously amplify the root surface area in contact with soil water (C) They possess photosynthetic chloroplasts that synthesize glucose underground (D) They secrete strong hydrochloric acid to dissolve large boulders **Answer: B**

Q317. When a physician listens to a heartbeat using a stethoscope, what specific mechanical cardiac events produce the characteristic rhythmic "lub-dub" heart sounds? (A) Blood rushing through the carotid arteries into the brain (B) The sudden, slow dilated snapping shut of the atrioventricular valves followed by the semilunar valves (C) The ribs rubbing against the pericardial sac during lung exhalation (D) The diaphragm vibrating against the bottom of the left ventricle **Answer: B**

Q318. Potato plants can be propagated vegetatively without seeds. Which structures on a potato tuber give rise to new leafy shoots when planted in moist soil? (A) Root hairs (B) The scars or "eyes" (dormant vegetative buds) (C) Pollen sacs (D) Stomata **Answer: B**

Q319. In which plant do adventitious vegetative buds develop along the serrated margins of fleshy leaves, dropping off into moist soil to develop into independent new plantlets? (A) Rose (B) Bryophyllum (C) Mango (D) Wheat **Answer: B**

Q320. How does the single-celled fungus yeast reproduce asexually under warm, sugar-rich conditions? (A) By forming winged seeds inside woody pine cones (B) By developing a small bulb-like projection (bud) that grows, receives a daughter nucleus, and detaches (C) By breaking into millions of dry airborne spores exclusively (D) By fusion of male and female pollen grains **Answer: B**

Q321. When green filamentous pond algae like Spirogyra mature in still water, what mode of asexual reproduction do they undergo when disturbed by water currents? (A) Budding (B) Fragmentation (C) Seed germination (D) Spore formation inside cones **Answer: B**

Q322. Why are microscopic asexual reproductive spores of bread mould (Rhizopus) and ferns capable of surviving for long periods under dry, freezing, or unfavorable conditions? (A) They contain liquid mercury that prevents dehydration (B) Each spore is protected by a rough, thick, resistant protective coat (C) They continuously perform photosynthesis in deep darkness (D) They possess muscular tails to burrow into deep soil rocks **Answer: B**

Q323. Which of the following flowers is strictly unisexual, possessing either stamens or pistils, but never both in the same blossom? (A) Mustard (B) Papaya (C) Rose (D) Petunia **Answer: B**

Q324. What are the three structural anatomical components of the female reproductive organ (pistil/carpel) of a flower, in order from top to bottom? (A) Anther, filament, and pollen grain (B) Stigma, style, and ovary (C) Petal, sepal, and receptacle (D) Spore, sporangium, and rhizome **Answer: B**

Q325. What is the biological distinction between self-pollination and cross-pollination? (A) Self-pollination occurs via bees; cross-pollination occurs via wind only (B) Self-pollination is pollen transfer within the same flower or same plant; cross-pollination is transfer to a flower on another plant of the same species (C) Self-pollination produces fleshy fruits; cross-pollination produces non-fleshy wood (D) Self-pollination requires two different plant families to fuse together **Answer: B**

Q326. Which combination of floral characteristics is typical of flowers adapted for cross-pollination by insects like honeybees and butterflies? (A) Tiny green petals, no scent, smooth non-sticky pollen, and hanging pendulous anthers (B) Large brightly colored petals, pleasant fragrant scent, sweet nectar, and sticky rough pollen grains (C) Complete absence of petals, aquatic submerged stems, and feathery brush-like stigmas (D) Flowers that bloom exclusively inside dark underground root cavities **Answer: B**

Q327. Why do wind-pollinated flowers, such as those of maize (corn) and grasses, produce huge quantities of dry, ultra-light, non-sticky pollen grains? (A) To poison herbivorous insects feeding on developing tassels (B) Because wind dispersal is non-directional, so light pollen easily drifts in air currents and enormous quantities compensate for vast pollen loss (C) To reflect solar rays and prevent seed embryo frostbite (D) To absorb rainwater before falling onto muddy soil **Answer: B**

Q328. What microscopic event marks the completion of biological fertilization in the ovary of a flowering plant? (A) The arrival of an insect on the yellow petal margin (B) The cellular fusion of a male gamete nucleus with the female egg nucleus inside the ovule to form a zygote (C) The shedding of all green leaves during autumn senescence (D) The evaporation of sweet nectar from the floral nectaries **Answer: B**

Q329. Following successful fertilization, which floral parts undergo transformation to become the protective seed and the edible fruit, respectively? (A) Petals become the seed; Sepals become the fruit (B) The ovule develops into the seed; the swollen ovary opens into the fruit (C) The stamen becomes the seed; the style becomes the fruit (D) The pollen grain becomes the seed; the stigma becomes the fruit **Answer: B**

Q330. Which of the following seeds or fruits possess specialized wings or tufts of fine silky hair that allow them to be carried away by wind currents? (A) Drumstick (Moringa) and Maple (winged seeds); Dandelion and Madar (Calotropis) (hairy seeds) (B) Mango and Coconut (C) Xanthium and Urena (D) Castor and Balsam **Answer: A**

Q331. Seeds of Xanthium (cocklebur) and Urena possess sharp hooked spines on their outer surfaces. How does this structural adaptation facilitate their geographical dispersal? (A) The hooks dig into deep mud to sprout during droughts (B) The hooks cling tenaciously to the fur, hair, and clothing of passing animals and humans, carrying seeds far from the parent plant (C) The hooks inject toxins that decompose animal flesh for fertilizer (D) The hooks act as miniature solar panels that absorb moonlight **Answer: B**

Q332. How do plants like Balsam and Castor disperse their seeds when their dry, ripe fruit capsules reach full maturity? (A) They burst open suddenly with explosive mechanical force, flinging seeds several meters away from the parent plant (B) They dissolve completely in morning dew, floating away like oil slicks (C) They attract bats that swallow the hard seeds whole (D) They burrow underground using rotating contractile taproots **Answer: A**

Q333. When a compatible pollen grain lands on the sticky stigma of a flower of the same species, what structure germinates and grows downward through the style towards the ovary? (A) A taproot hair (B) A microscopic pollen tube carrying the male gametes (C) A photosynthetic leaf petiole (D) A wooden vascular branch **Answer: B**

Q334. Why do commercial fruit orchard growers prefer vegetative propagation (grafting, cutting, layering) over growing new fruit trees from seed? (A) Seedlings require zero sunlight or irrigation to grow (B) Vegetative propagation produces exact genetic clones that flower and bear fruit much earlier than slow-growing seed-grown trees (C) Vegetatively grown fruit trees never produce pollen or leaves (D) Vegetative propagation completely eliminates the need for plant roots **Answer: B**

Q335. What is the base International Standard (SI) unit of speed, and what is its standard algebraic symbol? (A) Kilometer per hour (km/h) (B) Meter per second (m/s) (C) Centimeter per minute (cm/min) (D) Mile per hour (mph) **Answer: B**

Q336. A family car travels along a highway at an instantaneous speed of 72 km/h. What is this speed expressed in meters per second (m/s)? (A) 15 m/s (B) 20 m/s (C) 25 m/s (D) 30 m/s **Answer: B**

Q337. Which of the following describes an object executing strictly uniform motion along a straight path? (A) A city bus stopping repeatedly at traffic signals and bus stops (B) A high-speed train horizontally along a straight level track at a constant speed of 120 km/h (C) A roller-coaster car plunging down a steep looping track (D) A falling coconut accelerating towards the ground **Answer: B**

Q338. When the metallic bob of a suspended simple pendulum is released from one extreme position A, swings to the opposite extreme B, and swings back to A, what is this complete cycle called? (A) One trajectory (B) One full oscillation (C) One revolution (D) One displacement **Answer: B**

Q339. A student measures with a stopwatch that a simple pendulum takes exactly 44 seconds to complete 20 full oscillations. What is the time period of this pendulum? (A) 0.45 seconds (B) 2.2 seconds (C) 4.4 seconds (D) 24 seconds **Answer: B**

Q340. Two simple pendulums, X and Y, have identical string lengths of 100 cm. Pendulum X has a brass bob of mass 50 g, while Pendulum Y has a lead bob of mass 200 g. How do their time periods compare at the same location? (A) Pendulum Y has a time period four times larger than X (B) Both pendulums have exactly the same time period (C) Pendulum X has a time period twice as large as Y (D) Pendulum Y cannot oscillate due to excessive gravitational pull. **Answer: B**

Q341. How did ancient astronomical sundials, such as the massive stone sundials constructed at Jantar Mantar in India, measure the passage of hours during daytime? (A) By burning marked candle sticks of animal fat (B) By tracking the shifting position and angle of the shadow cast by a central gnomon as the Sun moves across the sky (C) By counting drops of water leaking through a punctured copper bowl (D) By measuring the cooling rate of hot iron balls **Answer: B**

Q342. What is the physical principle underlying the extraordinary precision of modern electronic quartz wristwatches and wall clocks? (A) The melting rate of tiny ice cubes inside the watch case (B) Extremely fast, steady, and regular piezoelectric vibrations of a tiny quartz crystal powered by an electric battery (C) Periodic radioactive decay of lead atoms (D) The continuous expansion and contraction of coiled mercury wire **Answer: B**

Q343. In a Cartesian distance-time graph where time is plotted on the horizontal X-axis and distance on the vertical Y-axis, what shape represents an object moving at constant (uniform) speed? (A) A straight diagonal line inclined to the time axis (B) A horizontal line parallel to the time axis (C) A vertically upward line parallel to the distance axis (D) A jagged zigzag waveform **Answer: A**

Q344. What does a straight horizontal line parallel to the time axis on a distance-time graph indicate about an object's motion? (A) The object is moving with infinitely increasing speed (B) The object is moving at a steady, uniform velocity (C) The object is falling freely under gravity (D) The object is reversing its direction backwards **Answer: B**

Q345. On an automobile dashboard, what distinct parameters are measured by the speedometer and the odometer, respectively? (A) Speedometer measures total fuel consumed; Odometer measures engine temperature. (B) Speedometer measures instantaneous speed in km/h; Odometer measures cumulative distance traveled in kilometers (C) Speedometer measures tire air pressure; Odometer measures battery voltage. (D) Speedometer measures travel time in minutes; Odometer measures passenger weight **Answer: B**

Q346. A cyclist rides along a paved road at a constant average speed of 15 km/h. How many minutes will the cyclist take to reach a school located 6 kilometers away? (A) 18 minutes (B) 24 minutes (C) 30 minutes (D) 40 minutes **Answer: B**

Q347. A commercial airplane flies at a steady cruising speed of 750 km/h for 3 hours and 30 minutes. What total distance has the airplane traveled? (A) 2250 kilometers (B) 2625 kilometers (C) 2800 kilometers (D) 3000 kilometers **Answer: B**

Q348. Vehicle P covers a distance of 180 km in 3 hours. Vehicle Q covers a distance of 150 km in 2 hours. Which vehicle is traveling faster, and by how much? (A) Vehicle P is faster by 10 km/h (B) Vehicle Q is faster by 15 km/h (C) Both vehicles travel at identical speeds of 60 km/h (D) Vehicle Q is faster by 30 km/h **Answer: B**

Q349. On the same distance-time graph, two cyclists A and B have straight diagonal motion lines. Cyclist A's line has a steeper inclination (greater angle with the time axis) than Cyclist B's line. What does this indicate? (A) Cyclist A is moving slower than Cyclist B (B) Cyclist A is moving faster than Cyclist B (C) Cyclist A started their journey earlier than Cyclist B (D) Cyclist B has traveled a greater total distance in less time **Answer: B**

Q350. Which natural periodic astronomical event was traditionally used across human history to define the fundamental unit of time known as "one month"? (A) The time taken by Earth to rotate once on its axis (one day) (B) The time interval from one new moon to the next consecutive new moon (lunar cycle) (C) The time taken by the Sun to complete one orbit around Jupiter (D) The interval between two consecutive solar eclipses **Answer: B**

Q351. In standard electrical circuit schematics, how is an electric cell conventionally represented by two parallel lines? (A) A longer thin line representing the negative terminal and a shorter thick line representing the positive terminal (B) A longer thin line representing the positive terminal and a shorter thicker line representing the negative terminal (C) Two identical parallel lines of equal length and thickness (D) A circle enclosing a lightning bolt symbol **Answer: B**

Q352. When combining two or more electric cells to construct a working battery, how must their terminals be connected? (A) The positive terminal of one cell must be connected to the positive terminal of the next cell. (B) The positive terminal of one cell must be connected to the negative terminal of the adjacent cell (C) The negative terminal of one cell must connect only to dry wooden insulating rods (D) Terminals should never touch or be connected by conducting wires **Answer: B**

Q353. Why are heating coils (elements) inside electric room heaters, geysers, and electric irons manufactured from nichrome alloy wire rather than copper? (A) Nichrome is a superconductor with zero resistance that stays ice cold (B) Nichrome possesses high electrical resistance and a very high melting point, glowing red hot without oxidizing or melting. (C) Nichrome is extremely cheap and melts into liquid at 50°C (D) Nichrome repels all magnetic fields in the room **Answer: B**

Q354. What physical property must the thin metallic wire used inside an electrical safety fuse possess to protect household circuits from electrical fires? (A) Extremely high melting point and zero electrical resistance (B) Low melting point so that excessive current heats and melts the wire rapidly, breaking the circuit (C) Thick copper coating that never breaks under any surge (D) Permanent magnetic attraction that locks the wire in place **Answer: B**

Q355. Why are modern domestic electrical installations increasingly replacing traditional cartridge fuses with Miniature Circuit Breakers (MCBs)? (A) MCBs generate extra electricity whenever household voltage drops (B) MCBs trip automatically to break the circuit when current exceeds safe limits, and can be easily reset by flipping a switch without wire replacement (C) MCBs eliminate the need for copper wiring in the walls (D) MCBs are disposable and melt completely after every use **Answer: B**

Q356. What did Danish physicist Hans Christian Oersted discover in 1820 when he placed a magnetic compass needle near a wire carrying direct electric current? (A) The compass needle melted into liquid mercury (B) The compass needle deflected from its normal north-south alignment, demonstrating that electric current produces a magnetic field (C) The electric current stopped flowing immediately through the wire (D) The wire turned into an optical mirror **Answer: B**

Q357. Why is a soft iron rod or nail used as the core inside an electromagnet coil rather than a hard steel bar? (A) Soft iron becomes an intensely strong temporary magnet while current flows, and quickly loses its magnetism when current is switched off (B) Soft iron remains permanently magnetized forever even after current is turned off (C) Soft iron insulates the wire to prevent electric shocks (D) Soft iron is lighter than air and floats in the coil **Answer: A**

Q358. Which two modifications will significantly increase the lifting power (magnetic strength) of an industrial crane's electromagnet? (A) Decreasing the number of coil turns and replacing the iron core with plastic (B) Increasing the number of turns in the insulated wire coil and increasing the electric current flowing through it (C) Using thinner thread and submerging the core in cold oil (D) Reversing the battery terminals every five seconds **Answer: B**

Q359. In an electric door bell, what causes the hammer/striker to repeatedly strike the metallic gong in rapid succession as long as the switch is held down? (A) A miniature electric motor rotating a paddle (B) The make-and-break contact screw mechanism that alternately energizes and de-energizes the electromagnet as the soft iron armature vibrates (C) Sound waves from outside vibrating the gong mechanically (D) Thermal expansion and contraction of the gong metal **Answer: B**

Q360. Why are Light Emitting Diodes (LEDs) strongly recommended over traditional incandescent tungsten filament bulbs for indoor use? (A) Incandescent bulbs emit pure ozone gas into rooms (B) Incandescent bulbs waste most electrical energy as unwanted heat, whereas LEDs convert almost all electrical energy directly into visible light (C) LEDs require a lot of diffused sunlight to illuminate (D) LED bulbs can only function during daytime **Answer: B**

Q361. What hazardous condition is referred to as an "electrical short circuit" in household wiring? (A) When connecting wires are cut too short with scissors during installation (B) When the insulation on live and neutral wires wears off and they touch directly, causing circuit resistance to plunge to near zero and current to surge dangerously (C) When a light bulb filament burns out and creates an open circuit (D) When electrical voltage drops from 220V to 110V during night **Answer: B**

Q362. How does connecting too many high-power electrical appliances (such as a heater, air conditioner, and electric kettle) to a single multi-plug socket cause electrical overloading? (A) The appliances compete for water molecules in the air (B) The total current drawn through that single socket exceeds the safe current carrying capacity of the wall wires, generating dangerous overheating (C) The socket magnetizes and attracts nearby furniture (D) It reverses the rotational direction of power station turbines **Answer: B**

Q363. Why should consumers always verify the presence of the ISI mark on electrical appliances and safety fuses before purchasing? (A) It proves the appliance was manufactured exclusively in Japan (B) It certifies that the product conforms to rigorous national safety and quality standards specified by the Bureau of Indian Standards (BIS) (C) It guarantees that the appliance will run without any electricity (D) It indicates that the appliance is made entirely of gold **Answer: B**

Q364. Which of the following factors determines the total quantity of thermal heat generated in an electric conductor when current flows through it? (A) Only the ambient barometric pressure outside the building (B) The material resistance of the conductor, the magnitude of electric current, and the duration of time the current flows (C) The color of paint applied to the insulation plastic only (D) The gravitational acceleration at that geographical latitude only **Answer: B**

Q365. Which modern medical imaging technology relies upon extraordinarily powerful superconducting electromagnets to generate detailed cross-sectional diagnostic scans of human soft tissues, bypassing ionizing radiation? (B) Magnetic Resonance Imaging (MRI) (C) Electrocardiography (ECG) (D) Sphygmomanometry **Answer: B**

Q366. Why is it strictly forbidden to operate domestic electrical switches or touch plugged-in appliances with wet hands? (A) Water can readily wash away copper wires to form combustible methane gas (B) Tap water contains dissolved minerals and ions that make it an effective electrical conductor, dramatically lowering skin resistance and causing fatal electric shocks (C) Wet fingers extinguish the electric current permanently (D) Water instantly dissolves the plastic casing of all switches **Answer: B**

Q367. In an electric circuit containing a cell, a key (switch), and a bulb, why does the bulb illuminate ONLY when the key is closed (ON position)? (A) Closing the key introduces atmospheric air into the bulb (B) Closing the key provides a continuous, unbroken conducting path for electrons to circulate from one cell terminal to the other (C) Opening the key magnetizes the glass bulb (D) The cell only generates chemical potential when physical touch is detected **Answer: B**

Q368. Three cardboard squares with pinholes punched at identical heights are arranged in a straight row. A lit candle is viewed through the holes. What happens if the middle cardboard is shifted slightly to the left? (A) The candle flame appears upside down (B) The flame can no longer be seen because light travels strictly in straight lines (C) The flame appears twice as bright (D) The flame changes color from yellow to blue **Answer: B**

Q369. Which set of optical characteristics correctly describes the image of an object formed by a flat plane mirror? (A) Real, inverted, magnified, and formed in front of the mirror (B) Virtual, erect, same size as the object, same distance behind the mirror, and laterally inverted (C) Real, erect, diminished, and formed on a projection screen (D) Virtual, upside down, twice the size, and located at infinity **Answer: B**

Q370. Why is the word "AMBULANCE" painted in laterally inverted mirror script across the front hood of hospital emergency vehicles? (A) It is an ancient medical tradition with no functional purpose (B) So that drivers of vehicles ahead can read the word normally in their rear-view mirrors and quickly yield the right of way. (C) To prevent pedestrians from misinterpreting emergency sirens (D) It is a specialized military camouflage code **Answer: B**

Q371. What is the fundamental physical difference between a real optical image and a virtual optical image? (A) A real image is always erect; a virtual image is always inverted (B) A real image is formed by actual converging light rays and can be projected onto a physical screen; a virtual image cannot be captured on a screen (C) A real image exists only in outer space; a virtual image exists in water (D) A real image requires computer graphics software to render **Answer: B**

Q372. Why do dental surgeons utilize small concave mirrors when examining tooth cavities inside a patient's mouth? (A) Concave mirrors produce a virtual, upright, and greatly magnified image when held very close to the tooth (B) Concave mirrors produce a tiny inverted image that fits in the eye (C) Concave mirrors emit ultraviolet rays that kill oral bacteria (D) Concave mirrors freeze saliva to keep the tooth dry **Answer: A**

Q373. Why is a concave metallic reflector placed behind the bulb in vehicle headlights and searchlight torches? (A) To scatter light rays in all directions like a disco ball (B) When the bulb is positioned at the principal focus of the concave reflector, the reflected rays emerge as a powerful, parallel beam of light (C) To change the light color from white to yellow (D) To absorb all heat so the front glass does not get warm **Answer: B**

Q374. Why are convex mirrors universally installed as side wing/rear-view mirrors on cars, motorcycles, and buses? (A) They produce inverted real images that look artistic (B) They always produce erect, diminished images and offer a much wider field of view than a flat plane mirror (C) They make objects appear five times larger than they actually are (D) They work without any sunlight or headlights at night **Answer: B**

Q375. What happens when parallel rays of sunlight pass through a double convex glass lens onto a sheet of dry paper held at its focal point? (A) The lens disperses the light into dark shadow, chilling the paper (B) The lens converges the parallel solar rays to a sharp, intensely hot focal spot, igniting the paper (C) The lens turns the paper into clear liquid glass (D) The rays bounce straight backwards into outer space **Answer: B**

Q376. How does a concave lens affect a beam of parallel light rays passing through it, and what type of image does it always produce? (A) It converges rays to a real point; always produces a magnified real image (B) It diverges (spreads out) the light rays; always produces a virtual, erect, and diminished image (C) It absorbs 100% of light and reflects nothing (D) It twists light rays into concentric spirals **Answer: B**

Q377. What optical phenomenon did Sir Isaac Newton demonstrate in 1666 by passing a narrow beam of sunlight through a triangular glass prism? (A) Prisms create colored light by chemically dyeing the glass molecules (B) White sunlight is a polychromatic mixture of seven constituent colors that separate (disperse) due to differing degrees of refraction (C) Glass prisms convert solar rays into radio waves (D) Light is composed exclusively of black and white particles **Answer: B**

Q378. Which of the following lists the seven constituent colors of white light in correct sequence from least deviated (bent) to most deviated when refracted through a prism? (A) Red, Orange, Yellow, Green, Blue, Indigo, Violet (ROYGBIV) (B) Violet, Indigo, Blue, Green, Yellow, Orange, Red (VIBGYOR) (C) Green, Red, Blue, Yellow, Violet, Indigo, Orange (D) Blue, Yellow, Red, Green, Orange, Violet, Indigo **Answer: A**

Q379. What role do microscopic airborne raindrops play in the sky during the formation of a natural rainbow after a rain shower? (A) They act as tiny spherical prisms that refract, disperse, and internally reflect sunlight back towards the observer (B) They absorb all sunlight and emit neon electrical glow (C) They freeze into flat mirrors that reflect cloud undersides (D) They magnify the sun's corona like binoculars **Answer: A**

Q380. A circular cardboard disc divided into seven sectors painted with the VIBGYOR colors is rotated rapidly on a central spindle. Why does the spinning disc appear grayish-white? (A) The high centrifugal speed strips the pigment molecules off the cardboard (B) Due to persistence of vision, the retinal images of all seven colors overlap and fuse together in the brain, creating the visual perception of white light (C) Friction with atmospheric air bleaches the colors (D) Cardboard becomes transparent at high rotational speeds **Answer: B**

Q381. To use a simple convex hand lens as a magnifying glass to read microscopic fine print in a book, where should the lens be positioned relative to the paper? (A) At a distance greater than twice its focal length (beyond 2F) (B) At a distance closer than its principal focal length (between the optical center and focus F) (C) At exactly ten meters away from the book (D) Submerged under water against the book spine **Answer: B**

Q382. When you observe your face in the curved inner surface and outer curved surface of a shiny stainless steel spoon, what image orientations do you observe, respectively? (A) Inner surface acts as a concave mirror (inverted image at arm's length); outer surface acts as a convex mirror (erect diminished image) (B) Inner surface acts as a convex mirror; outer surface acts as a concave mirror (C) Both surfaces produce identical magnified real images (D) Both surfaces reflect zero light because steel absorbs all photons **Answer: A**

Q383. What optical assembly inside a traditional kaleidoscope produces symmetrical, infinitely repeating geometric patterns from broken glass bangles? (A) Three long rectangular plane mirror strips inclined to each other at 60-degree angles (B) A single thick slab of lead glass surrounded by magnets. (C) Two convex lenses placed parallel to each other (D) A concave mirror facing a flat black screen **Answer: A**

Q384. Why are gigantic concave parabolic mirrors employed in large-scale solar thermal power plants and solar cookers? (A) To reflect solar rays into outer space to cool down the planet (B) To capture parallel incident solar radiation and concentrate it at a single focal point, generating extreme temperatures for boiling water or melting metals (C) To transform sunlight into solid diamond crystals (D) To protect solar panels against night frost **Answer: B**

Q385. In a dense natural forest, what is the continuous overhead roof formed by the interwoven branches and foliage of tall mature trees called? (A) Understorey (B) Canopy (C) Forest floor (D) Humus mantle **Answer: B**

Q386. How do micro-organisms (bacteria and fungi) acting as decomposers on the damp forest floor benefit the health of the forest ecosystem? (A) They freeze dead leaves into rock minerals to prevent decomposition. (B) They break down dead leaves and animal carcasses into dark organic humus, returning essential chemical nutrients to the soil for tree roots (C) They consume tree roots to stop forests from growing too tall (D) They convert atmospheric nitrogen into toxic ammonia gas **Answer: B**

Q387. Why are vast natural forests frequently described by environmental scientists as the "green lungs" of planet Earth? (A) Forests absorb oxygen gas and release nitrogen into clouds (B) Forest plants perform daytime photosynthesis, absorbing carbon dioxide and releasing life-sustaining oxygen, maintaining global atmospheric gas balance (C) Tree trunks inhale dust particles through bark spiracles (D) Forests exhale cool winds that prevent earthquakes **Answer: B**

Q388. How does an undisturbed natural forest prevent flash floods and promote the steady recharge of underground water tables? (A) The tree canopy slows the direct impact of heavy raindrops, while sponge-like humus and deep root networks facilitate slow infiltration of water into aquifers. (B) Tree roots secrete impermeable wax that channels all rainwater into open oceans immediately. (C) Forest soil repels water molecules to keep groundwater tables bone dry (D) Forests evaporate 100% of rainwater into space before it touches the soil **Answer: A**

Q389. Consider the simple forest food chain: Grass → Insects → Frogs → Snakes → Eagles. What ecological consequence will occur if all frogs in this ecosystem are eliminated? (A) The insect population will surge destructively while snakes will face food scarcity and decline. (B) Grass will immediately stop photosynthesizing. (C) Eagles will double in population within 24 hours (D) Snakes will begin consuming soil rocks directly **Answer: A**

Q390. Why does clear-cutting and deforestation of steep mountain hillsides invitably result in devastating landslides and severe loss of fertile topsoil? (A) Raindrops become heavier in the absence of tall trees. (B) Tree roots physically anchor and bind soil particles together; without them, torrential runoff easily washes away loose, unprotected topsoil. (C) Felled tree logs attract subterranean burrowing rodents that dig tunnels. (D) Soil turns into radioactive dust when exposed to sunlight. **Answer: B**

Q391. What is sewage in the context of urban environmental management? (A) Pure mineral water collected from mountain glaciers. (B) Liquid municipal waste containing dissolved and suspended solids, organic impurities (feces, urea), toxic chemicals, and disease-causing micro-organisms. (C) Rainwater stored in sterile municipal drinking reservoirs. (D) Clean steam released from industrial cooling towers. **Answer: B**

Q392. Which of the following fatal or debilitating infectious diseases are transmitted to humans through drinking water contaminated with raw, untreated domestic sewage? (A) Cholera, typhoid, dysentery, and hepatitis A. (B) Asthma, bronchitis, and lung emphysema. (C) Rickets, scurvy, and goiter. (D) Color blindness and hemophilia. **Answer: A**

Q393. In a modern Wastewater Treatment Plant (WWTP), what is the specific operational function of the initial bar screen unit? (A) To add chlorine gas to kill microscopic bacteria. (B) To filter out large, bulky floating debris such as plastic bottles, rags, sticks, and cans before water enters treatment tanks. (C) To settle out dissolved mineral salts and heavy metals. (D) To heat wastewater to its boiling point. **Answer: B**

Q394. How does a grit and sand removal chamber separate coarse abrasive minerals from incoming municipal wastewater? (A) Wastewater is boiled until sand evaporates into vapor. (B) The flow velocity of wastewater is substantially slowed down, allowing heavy sand, grit, and small pebbles to settle to the bottom by gravity. (C) Powerful chemical acids are added to dissolve sand grains. (D) Electromagnets pull non-magnetic sand grains to the surface. **Answer: B**

Q395. What valuable renewable energy resource is produced in a wastewater treatment plant when organic sludge settled in clarifiers is digested by anaerobic bacteria in closed digesters? (A) Biogas (primarily methane and carbon dioxide), used to generate electricity and heat. (B) Nuclear uranium fuel rods. (C) Pure liquid petroleum gasoline. (D) Solid coal lumps. **Answer: A**

Q396. Why is compressed air continuously bubbled through clarified sewage wastewater inside the aeration tank of a wastewater treatment plant? (A) To freeze organic waste into floating ice cubes. (B) To provide dissolved oxygen for aerobic microbes to rapidly multiply and consume remaining organic wastes, soaps, and food matter. (C) To blow all water out of the tank into the clouds. (D) To kill all aerobic bacteria instantly. **Answer: B**

Q397. Before treated effluent water is safely discharged into natural rivers or used for municipal irrigation, which chemical agents are typically added to disinfect it of remaining pathogenic micro-organisms? (A) Chlorine or Ozone. (B) Sulfuric acid or Nitric acid. (C) Sodium hydroxide or Potassium carbonate. (D) Crude petroleum or Diesel. **Answer: A**

Q398. Why are rows of Eucalyptus trees frequently planted alongside open sewage drainage lagoons and wastewater stabilization ponds? (A) Eucalyptus leaves secrete strong bleach that sterilizes raw sewage instantly. (B) Eucalyptus trees have an extremely high transpiration rate, rapidly absorbing wastewater and transpiring pure, clean freshwater vapor into the atmosphere. (C) Eucalyptus roots convert liquid wastewater into edible table oil. (D) Eucalyptus trees repel all flying birds from landing in ponds. **Answer: B**

Q399. Why should leftover cooking oils, ghee, and culinary fats NEVER be poured directly down kitchen sink drains? (A) They attract termites that eat plastic PVC pipes. (B) Fats and oils harden upon cooling in sewer pipes, trapping food debris and causing stubborn pipe blockages, and coat soil pores in septic fields. (C) Cooking oils evaporate and create combustible indoor smog. (D) Cooking oils dissolve metallic kitchen sinks within minutes. **Answer: B**

Q400. How does an eco-friendly vermi-processing toilet treat human waste safely without contaminating groundwater or requiring extensive municipal sewer networks? (A) Human waste is electrocuted using high-voltage solar batteries. (B) Red earthworms actively feed on and decompose human excreta, converting it completely into odorless, pathogen-free, nutrient-rich vermicompost. (C) Chemical formaldehyde freezes the waste permanently. (D) Waste is flushed directly into deep underground aquifers SECTION: SOCIAL STUDIES (200 Questions) **Answer: B**

Q401. Who was the Arab geographer who drew a world map in 1154 CE where south India was depicted where north India is, and Sri Lanka was placed at the top? (A) Al-Idrisi. (B) Ibn Battuta. (C) Al-Biruni. (D) Minhaj-i Siraj. **Answer: A**

Q402. How did the map of the Indian subcontinent prepared by the French cartographer in the 1720s differ fundamentally from Al-Idrisi's 1154 CE map? (A) It showed only mountain ranges and ignored coastal regions. (B) It was oriented with North at the top and possessed surprisingly familiar spatial detail used by European sailors. (C) It was written entirely in Arabic with inverted directional axes. (D) It completely excluded South India and Sri Lanka. **Answer: B**

Q403. In the thirteenth century, the chronicler Minhaj-i Siraj used the term "Hindustan" to refer specifically to: (A) The entire southern peninsula south of the Krishna river. (B) The lands of Punjab, Haryana, and the fertile plains between the Ganga and Yamuna. (C) All regions where Hindi and its dialects were actively spoken. (D) The island territory of Sri Lanka and Lakshadweep. **Answer: B**

Q404. How did the Mughal emperor Babur use the term "Hindustan" in the early sixteenth century? (A) To denote a democratic nation-state with adult franchise. (B) To describe the topography, fauna, and cultural habits of the inhabitants of the subcontinent. (C) To denote exclusively the port towns of Gujarat and Malabar. (D) To refer strictly to the Vijayanagara Empire in South India. **Answer: B**

Q405. In modern usage, "foreigner" means someone who is not an Indian. What did the term "pardesi" or "ajnabi" mean in the medieval period? (A) Any stranger who appeared in a village and was not part of that local society or culture. (B) Exclusively traders arriving from European maritime vessels. (C) A royal envoy appointed directly by the emperor. (D) A scholar proficient in Sanskrit grammatical texts. **Answer: A**

Q406. Why did the practice of copying manuscripts by hand by scribes create significant difficulties for modern historians? (A) Scribes intentionally destroyed the original texts after making single copies. (B) Small copying errors, word omissions, and gradual editorial changes over centuries produced widely differing manuscript versions. (C) Scribes were strictly forbidden from using paper or ink. (D) Printing presses had already standardized all historical records in 1200 CE. **Answer: B**

Q407. Ziyauddin Barani, the fourteenth-century chronicler, wrote his first chronicle in 1356 and another version two years later. Why was the earlier version unknown to modern historians until 1971? (A) It was buried beneath the Qutb Minar in Delhi. (B) It remained undiscovered in large library collections because historians were unaware of its existence. (C) It was carried away to Portugal by Vasco da Gama. (D) It was written in an encrypted code that required modern computers to decipher. **Answer: B**

Q408. Which crucial technological innovation in irrigation appeared in the Indian subcontinent between 700 and 1750 CE? (A) Drip irrigation pipes made of vulcanized rubber. (B) The Persian wheel (rahat). (C) Steam-driven submersible pumps. (D) Electric turbine tube wells. **Answer: B**

Q409. Which new crops arrived in the Indian subcontinent during the medieval period from the Americas and other continents? (A) Potatoes, corn, chillies, tea, and coffee. (B) Wheat, barley, and rice only. (C) Sugarcane, cotton, and mustard exclusively. (D) Black pepper, cardamom, and ginger only. **Answer: A**

Q410. The term "Rajput" is derived from "Rajaputra", which literally means: (A) The master of trade routes. (B) The son of a ruler or king. (C) The keeper of royal horses. (D) The scholar of ancient Vedic hymns. **Answer: B**

Q411. How were the rules, conduct, and disputes within sub-castes (jatis) regulated in medieval Indian villages? (A) By the supreme court established in the capital city. (B) By an assembly of elders known as the Jati Panchayat, while also submitting to village community customs. (C) By direct orders issued daily by foreign maritime traders. (D) By democratic ballot elections involving all children. **Answer: B**

Q412. British historians in the nineteenth century divided the history of India into which three distinct periods based largely on the religion of rulers? (A) Ancient, Medieval, and Modern. (B) Hindu, Muslim, and British. (C) Stone Age, Bronze Age, and Iron Age. (D) Vedic, Buddhist, and Islamic. **Answer: B**

Q413. In the seventh century, existing kings recognized big landlords or warrior chiefs as subordinates termed: (A) Mansabdars. (B) Samantas. (C) Jagirdars. (D) Muqtis. **Answer: B**

Q414. Dantidurga, the Rashtrakuta chief who overthrew his Chalukya overlord in the mid-eighth century, performed which famous ritual to establish Kshatriya status? (A) Ashvamedha Yajna. (B) Hiranya-garbha (literally, the golden womb). (C) Rajsuya Yajna. (D) Vajapeya Yajna. **Answer: B**

Q415. Kadamba Mayurasharmdin and Guriara-Pratihara Harichandra gave up their traditional Brahmana callings to take up arms and establish kingdoms in which respective regions? (A) Karnataka and Rajasthan. (B) Bengal and Odisha. (C) Kerala and Tamil Nadu. (D) Assam and Punjab. **Answer: A**

Q416. What was a "Prashasti" composed by learned Brahmanas in medieval royal courts? (A) A tax collection register recording daily village grain deliveries. (B) A eulogy or literature composed in praise of rulers, depicting them as valiant, victorious warriors. (C) A judicial verdict penalizing peasants who failed to till their lands. (D) An architectural design blueprint for constructing canal dams. **Answer: B**

Q417. On what material were royal records of land grants to Brahmanas typically inscribed and given to recipients as proof of ownership? (A) Papyrus scrolls. (B) Copper plates bound together with a royal seal ring. (C) Fired terracotta bricks. (D) Carved wooden tablets. **Answer: B**

Q418. Unlike traditional court poets who only praised their patron kings, which twelfth-century Kashmiri author wrote the long Sanskrit poem "Rajatarangini", often critically assessing rulers and their policies? (A) Kalidasa. (B) Kalhana. (C) Banabhatta. (D) Harishena. **Answer: B**

Q419. Which three powerful dynasties fought for centuries in the famous "Tripartite Struggle" to control the prized city of Kanauj in the Ganga valley? (A) Cholas, Cheras, and Pandyas. (B) Gurjara-Prathiharas, Rashtrakutas, and Palas. (C) Mughals, Marathas, and Rajputs. (D) Mauryas, Guptas, and Kushanas. **Answer: B**

Q420. Sultan Mahmud of Ghazni (Afghanistan), who raided wealthy temple cities in India between 997 and 1030 CE, entrusted which prominent scholar to write an account of the subcontinent titled "Kitab al-Hind"? (A) Al-Biruni. (B) Amir Khusrau. (C) Abul Fazl. (D) Ziyauddin Barani. **Answer: A**

Q421. Prithviraja III (1168–1192), the best-known Chahamana (Chauhan) ruler who governed the region around Delhi and Ajmer, defeated which Afghan invader in 1191 before being defeated by him in 1192? (A) Mahmud of Ghazni. (B) Sultan Muhammad Ghori. (C) Genghis Khan. (D) Timur. **Answer: B**

Q422. Who captured the Kaveri delta from the Muttaraiyar chiefs in the middle of the ninth century and built the city of Thanjavur and a temple for goddess Nishumbhasudini? (A) Rajaraja I. (B) Vijayalaya. (C) Rajendra I. (D) Kulottunga I. **Answer: B**

Q423. Which Chola king conducted daring military raids into the Ganga valley, Sri Lanka, and countries of Southeast Asia, developing a powerful maritime navy? (A) Rajaraja I. (B) Rajendra I. (C) Vijayalaya. (D) Aditya I. **Answer: B**

Q424. In Chola village administration, an assembly of prominent Brahmana landholders that functioned through specialized committees was known as the: (A) Ur. (B) Sabha. (C) Nadu. (D) Nagaram. **Answer: B**

Q425. Which celebrated tenth-century Chola inscription from Tamil Nadu details the exact qualification criteria, disqualifications, and lottery system (kudavolai) used to elect committee members of the Sabha? (A) Uttaramerur Inscription. (B) Aihole Inscription. (C) Allahabad Pillar Inscription. (D) Hathigumpha Inscription. **Answer: A**

Q426. Delhi first became the capital of a kingdom under which Rajput dynasty in the twelfth century? (A) Tomara Rajputs. (B) Chauhans of Ajmer. (C) Paramaras of Malwa. (D) Chandellas of Bundelkhand. **Answer: A**

Q427. What were the widely circulated copper and silver coins minted in medieval Delhi known as? (A) Dinar. (B) Dehliwal. (C) Mohur. (D) Rupiya. **Answer: B**

Q428. Histories written in Persian, the official court language of administration under the Delhi Sultans, are known as: (A) Vachans. (B) Tarikh (singular) or Tawarikh (plural). (C) Upanishads. (D) Jatakamalas. **Answer: B**

Q429. Which thirteenth-century writer formulated the concept of the "Circle of Justice", linking the survival of kings to soldiers, soldiers' salaries to revenue, and revenue to the prosperity of peasants? (A) Fakhr-i Mudabbir. (B) Amir Khusrau. (C) Ibn Battuta. (D) Ziyauddin Barani. **Answer: A**

Q430. Who was the daughter of Sultan Iltutmish who ascended the throne of Delhi in 1236 CE, becoming one of medieval India's first sovereign female rulers? (A) Rudramadevi. (B) Raziyya. (C) Nur Jahan. (D) Didda. **Answer: B**

Q431. How did Queen Rudramadevi of the Kakatiya dynasty of Warangal (modern Telangana) handle her gender differently on inscriptions compared to Raziyya? (A) She renounced all royal titles and ruled as a commoner. (B) She changed her name on inscriptions and pretended to be a man. (C) She ordered all historical records about herself to be dissolved in river water. (D) She ruled strictly behind a curtain without interacting with ministers. **Answer: B**

Q432. In the early thirteenth century, the control of the Delhi Sultans rarely went beyond heavily fortified settlements with soldiers called: (A) Iqtas. (B) Garrison towns. (C) Hinterlands. (D) Caravanserais. **Answer: B**

Q433. Why did early Delhi Sultans, particularly Iltutmish, prefer to appoint trained Turkish slaves ("bandagan") as military commanders and governors rather than traditional aristocrats? (A) Slaves were completely dependent on the Sultan for their livelihood and had no independent family dynasties to promote. (B) Slaves possessed modern European firearms unknown to local nobles. (C) Aristocrats refused to enter the palace grounds on religious grounds. (D) Slaves were exempt from paying any customs duties on horses. **Answer: A**

Q434. In the Delhi Sultanate, territories granted to military commanders as assignments of revenue were known as: (A) Mansas. (B) Iqtas. (C) Jagirs. (D) Zamindaris. **Answer: B**

Q435. What were the primary responsibilities of a "muqti" or "iqtadar" under the Delhi Sultanate administration? (A) Lead military campaigns, maintain required troops, and collect land revenue to pay themselves and soldiers. (B) Translate Sanskrit epic poems into Persian verse. (C) Supervise agricultural seed production in coastal ports. (D) Conduct maritime voyages to trade spices in the Mediterranean. **Answer: A**

Q436. What was the major agricultural tax called "kharaj" levied during the reign of Alauddin Khalji? (A) A fixed 10% tax on cattle milk. (B) A tax on cultivation amounting to roughly 50 percent of the peasant's yield. (C) A toll levied only on foreign merchants crossing mountain passes. (D) A property tax assessed on the height of residential house doors. **Answer: B**

Q437. Why did Muhammad bin Tughlaq's innovative experiment with token bronze/copper currency collapse in the fourteenth century? (A) The coins were imported from Europe and sank in shipwrecks. (B) The token coins were easily forged because the state took no measures to prevent counterfeiting, and citizens paid taxes using cheap forged tokens while hoarding gold and silver. (C) Bronze and copper were banned throughout the Sultanate for religious reasons. (D) The coins melted in the extreme summer heat of Delhi. **Answer: B**

Q438. Which Mongol conqueror invaded Transoxiana in northeast Iran in 1219 and repeatedly attacked the borders of the Delhi Sultanate during the reigns of Alauddin Khalji and Muhammad Tughlaq? (A) Kublai Khan. (B) Genghis Khan. (C) Hulagu Khan. (D) Timur. **Answer: B**

Q439. The Mughals were proud of their descent from which Central Asian conqueror on their father's side, while rejecting association with Genghis Khan? (A) Timur (Tamerlane). (B) Mahmud of Ghazni. (C) Attila the Hun. (D) Saladin. **Answer: A**

Q440. In which year did Babur defeat the Delhi Sultan Ibrahim Lodi at the First Battle of Panipat, effectively establishing the Mughal Empire in India? (A) 1510 CE. (B) 1526 CE. (C) 1556 CE. (D) 1576 CE. **Answer: B**

Q441. Which Afghan chieftain defeated the Mughal emperor Humayun at Chausa (1539) and Kanauj (1540), forcing him into exile in Iran? (A) Bairam Khan. (B) Sher Shah Suri. (C) Malik Ambar. (D) Hemachandra (Hemu). **Answer: B**

Q442. Akbar ascended the throne at the age of thirteen in 1556. Who acted as his military commander and trusted regent during his early minority years? (A) Abul Fazl. (B) Bairam Khan. (C) Todar Mal. (D) Man Singh. **Answer: B**

Q443. In the Mughal administration, what did the term "mansab" literally signify? (A) A hereditary landed estate exempt from all imperial taxation. (B) An individual's position or official rank in the state hierarchy. (C) A certificate of theological scholarship issued by the royal mufti. (D) A commercial license permitting maritime trade with Arabia. **Answer: B**

Q444. Within the Mansabdari system, how did "Zat" differ from "Sawar"? (A) Zat determined noble rank and personal salary, while Sawar indicated the number of cavalrymen (horsemen) the mansabdar had to maintain. (B) Zat was granted exclusively to naval officers, while Sawar was given to infantry archers. (C) Zat meant hereditary land ownership, while Sawar was a temporary cash bonus. (D) Zat was reserved for religious leaders, while Sawar was held by foreign ambassadors. **Answer: A**

Q445. How did Mughal mansabdars receive their salaries from assigned "jagirs"? (A) Mansabdars lived on the land and directly farmed it with their own households (B) Mansabdars had rights to the revenue of their assignments, collected for them by servants while they served in distant provinces (C) The emperor paid all mansabdars exclusively in imported Persian gold bars (D) Jagirs were permanent private property passed unconditionally to heirs without state audit **Answer: B**
Q446. Who was Akbar's famous finance minister who conducted a careful 10-year survey of crop yields, prices, and cultivated areas to institute the revenue system known as 'Zabt'? (A) Raja Man Singh (B) Raja Todar Mal (C) Birbal (D) Tansen **Answer: B**
Q447. Abul Fazl wrote a monumental three-volume history of Akbar's reign titled 'Akbarnama'. What was the third volume, famous for its rich statistical and administrative details, called? (A) Ain-i Akbari (B) Baburnama (C) Tuzuk-i Jahangiri (D) Padshahnama **Answer: A**
Q448. In 1575 at Fatehpur Sikri, Akbar established the "Ibadat Khana" for which primary purpose? (A) To store weapons of war and gunpowder (B) To conduct theological and philosophical discussions with scholars of different religions (Ulama, Brahmanas, Jesuit priests, and Zoroastrians) (C) To train imperial cavalry horses imported from Arabia (D) To hold commercial auctions for foreign textile merchants **Answer: B**
Q449. What was the core philosophical doctrine of "Sulh-i Kul" developed by Akbar and framed by Abul Fazl? (A) Forced conversion of all imperial subjects to a single orthodox religion (B) Universal peace, religious tolerance, and justice for all communities regardless of their faith (C) A military doctrine mandating annual campaigns against southern kingdoms (D) The total elimination of all regional languages in favour of Persian **Answer: B**
Q450. How did Akbar consolidate political loyalty with the Rajput rulers of Rajasthan without fighting continuous wars? (A) By marrying daughters of prominent Rajput rulers (such as the Kachchhwaha princess of Amber) and assigning high mansabdari ranks to Rajput nobles (B) By confiscating all Rajput ancestral territories and forcing them into exile (C) By signing a permanent defensive alliance with the Portuguese navy (D) By converting all Rajput palaces into imperial state mints **Answer: A**
Q451. Between the eighth and thirteenth centuries, the style of architecture where roofs, doors, and windows were made by placing a horizontal beam across two vertical columns was called: (A) Arcuate style (B) Trabeate or corbelled style (C) Gothic style (D) Doric style **Answer: B**
Q452. From the twelfth century, the "arcuate" architectural style became prominent. What was the central stone at the apex of an arch that bore the structural weight of the superstructure called? (A) Pedestal (B) Keystone (C) Pillar base (D) Cornice **Answer: B**
Q453. Why did the use of high-quality limestone cement accelerate large-scale architectural construction from the twelfth century onwards? (A) It was light as wood and could float across moat waterways (B) When mixed with stone chips, it hardened into solid concrete, enabling faster and durable bonding of heavy stones (C) It functioned as an insect repellent that prevented fungal decay in sandstone (D) It was transparent and allowed sunlight to illuminate dark sanctums **Answer: B**
Q454. The magnificent Kandariya Mahadeva temple dedicated to Lord Shiva at Khajuraho was constructed in 999 CE by King Dhangadeva belonging to which dynasty? (A) Chola dynasty (B) Chandella dynasty (C) Rashtrakuta dynasty (D) Chalukya dynasty **Answer: B**
Q455. Why did the construction of the 90-tonne stone shikhara atop the Rajaraieshvara temple at Thanjavur present a tremendous engineering challenge in the eleventh century? (A) No cranes existed, so architects built an inclined earthen ramp over 4 km long to haul the massive monolith to the summit (B) The stone had to be transported across the ocean from Persia on royal ships (C) The kings prohibited the use of iron chisels or wooden levers (D) It was carved out of soft river mud that had to be baked in kilns atop the tower **Answer: A**
Q456. Who constructed the first balcony of the Qutb Minar around 1199 CE, featuring small arches, geometric bands, and Arabic inscriptions? (A) Alauddin Khalji (B) Qutbuddin Aybak (C) Sher Shah Suri (D) Firoz Shah Tughlaq **Answer: B**
Q457. Why did medieval rulers in India and neighboring kingdoms specifically target, loot, and destroy the grand temples of rival kings during military campaigns? (A) Temples were used as ammunition factories producing gunpowder (B) Temples were major repositories of enormous accumulated wealth and symbolized the sovereign power and political legitimacy of defeated rulers (C) The invading kings wanted to clear land to establish agricultural farms (D) Temples were constructed solely of flammable timber **Answer: B**
Q458. What is the characteristic layout of a Mughal "Chahar Bagh" (four-quartered garden) perfected under Akbar, Jahangir, and Shah Jahan? (A) A circular garden surrounded by artificial volcanic rock hills (B) A formal rectangular enclosure divided into four equal symmetrical quarters by intersecting water channels, with open forest clearing with no formal walkways or water bodies (D) A terraced slope cultivated with terraced paddy fields **Answer: B**
Q459. What was the decorative technique of "Pietra Dura" extensively used behind Emperor Shah Jahan's throne in the Diwan-i Am at the Red Fort, Delhi? (A) Fresco plaster painting depicting battlefield scenes (B) Inlaying colored, hard precious and semi-precious stones (lapis lazuli, onyx, jasper) into carved marble or sandstone depressions (C) Applying molten gold leaf directly on uncarved granite pillars (D) Stamping geometric clay seals on wooden door panels **Answer: B**
Q460. Sultan Iltutmish won widespread acclaim and religious respect for constructing a large water reservoir just outside Delhi-I Kuhna, popularly celebrated as: (A) Hauz-i Khas (B) Hauz-i Sultani (or King's Reservoir) (C) Ahasagar Lake (D) Sudarshana Lake **Answer: B**
Q461. Why did temple towns like Thanjavur, Kanchipuram, and Somnath rapidly develop into major urban commercial centers in medieval India? (A) Temples used their accumulated wealth and land grants to finance banking, trade, and pilgrimages, attracting priests, artisans, weavers, and traders (B) Peasants were forbidden from cultivating crops within 100 miles of temples (C) Foreign naval fleets established their administrative headquarters inside temple courtyards (D) Temples were the only locations where iron weapons were legally forged **Answer: A**
Q462. The renowned medieval craft of "Bidri", which involved exquisite inlay work in copper and silver, originated and flourished among the craftspersons of: (A) Bidar (in Karnataka) (B) Surat (in Gujarat) (C) Murshidabad (in Bengal) (D) Madurai (in Tamil Nadu) **Answer: A**
Q463. What was the primary function of celebrated south Indian merchant guilds such as "Manigramam" and "Nanadesi" from the eighth century onward? (A) To organize peasant revolts against royal tax collectors (B) To protect collective mercantile interests, pool capital, and conduct long-distance trade both within India and with Southeast Asia and China (C) To guard the sacred animals of remote forest monasteries (D) To compose epic Sanskrit poetry in royal darpars **Answer: B**
Q464. The architectural ruins of Hampi, the capital of the Vijayanagara Empire located on the Tungabhadra basin, are uniquely distinctive because: (A) No mortar or cementing agent was used in building the massive stone walls; blocks were held together by interlocking grooves (B) All buildings were constructed exclusively of sun-dried straw bricks (C) The city was constructed entirely floating on wooden rafts on the river (D) It featured underground glass tunnels connecting royal pavilions **Answer: A**
Q465. Which military coalition defeated the Vijayanagara Empire at the Battle of Talikota in 1565, leading to the sacking and subsequent ruin of Hampi? (A) The British East India Company and French navy (B) The Deccan Sultans of Bijapur, Golconda, Ahmadnagar, Bidar, and Berar (C) The Mughal armies under Babur (D) The Portuguese fleet based in Goa **Answer: B**
Q466. Why was the port city of Surat in Gujarat celebrated as the "Gateway to Mecca" during the Mughal period? (A) The city housed the largest mosque in the Middle East (B) Pilgrim ships bound for the holy Islamic pilgrimage of Hajj in Arabia embarked from Surat port (C) The Sultan of Oman governed Surat as his primary administrative capital (D) Surat was situated directly on the Red Sea coast **Answer: B**
Q467. What was a "Hundi" issued by the prosperous Kathiawad Seths or Mahajans of Surat, which was honored in distant financial markets like Cairo, Basra, and Antwerp? (A) A gold coin minted exclusively for temple offerings (B) A financial bill of exchange recording a financial deposit that allowed a traveler to present it and withdraw money in distant markets (C) A royal passport granting permission to sail along pirate-infested shores (D) An insurance certificate covering sunken naval warships **Answer: B**
Q468. Which factor contributed directly to the commercial decline of Surat towards the close of the seventeenth century? (A) The complete drying up of the Arabian Sea (B) The loss of markets due to the decline of the Mughal Empire, control of sea routes by the Portuguese, and competition from Bombay where the English East India Company shifted its headquarters in 1668 (C) A total ban on all textile weaving by local craftsmen (D) Massive volcanic eruptions destroying the Gujarati coastline **Answer: B**
Q469. The port town of Masulipatnam (Machilipatnam) situated on the delta of the Krishna river was fiercely contested in the seventeenth century between which two European rival trading companies? (A) Dutch and English East India Companies (B) Spanish and Russian trading fleets (C) Portuguese and Danish companies exclusively (D) Ottoman and Persian merchants **Answer: A**
Q470. In the eighteenth century, as the English East India Company established commercial supremacy in Madras, Bombay, and Calcutta, native Indian weavers, artisans, and merchants were segregated into designated residential quarters known as: (A) Civil Lines (B) Cantonments (C) "Black Towns" (D) White Enclaves **Answer: C**
Q471. Unlike mainstream caste-based Brahmanical society divided into rigid varna hierarchies, how were traditional tribal societies organized? (A) They were divided into strictly isolated wealthy aristocratic classes (B) Members were bound by kinship ties, shared land collectively according to custom, and did not follow rigid unequal caste divisions (C) They were governed entirely by written civil codes passed by parliament (D) They lived exclusively in underground subterranean caves **Answer: B**
Q472. Nomadic pastoralists moved over long distances with their herds of cattle and sheep. What goods did they exchange with settled agricultural peasants for grain and cloth? (A) Ghee, wool, and animal milk products (B) Gunpowder, muskets, and cannons (C) Printed books and paper stationery (D) Precious diamonds and emeralds exclusively **Answer: A**
Q473. Who were the most prominent nomadic trader-pastoralists in medieval India whose caravan of bullocks was termed a "tanda"? (A) Ahoms (B) Banjaras (C) Gonds (D) Bhils **Answer: B**
Q474. The Gonds lived in a vast forested region called Gondwana ("country inhabited by Gonds") and practiced which traditional method of farming? (A) Industrial greenhouse hydroponics (B) Shifting cultivation (slash-and-burn agriculture) (C) Chemical mechanized irrigation farming (D) Terraced grape viticulture exclusively **Answer: B**
Q475. The administrative system of the powerful Gond kingdom of Garha Katanga was centralized into units called "chaurasis," each comprising how many villages? (A) 24 villages (B) 84 villages (C) 100 villages (D) 50 villages **Answer: B**
Q476. Rani Durgavati, the brave Rajput princess of the Chandel dynasty of Mahoba who ruled Garha Katanga on behalf of her minor son Bir Narain, died heroically in 1565 resisting the invasion of which Mughal commander? (A) Asaf Khan (B) Bairam Khan (C) Todar Mal (D) Jai Singh **Answer: A**
Q477. The Ahoms migrated in the thirteenth century into the Brahmaputra valley from which modern country? (A) Tibet (B) Myanmar (Burma) (C) Afghanistan (D) Sri Lanka **Answer: B**
Q478. In the Ahom state, forced adult male labour mobilized on rotational duty for state construction and defense was known as: (A) Mansabdar (B) Paik (C) Muqti (D) Samanta **Answer: B**
Q479. What were the unique historical chronicles written by the Ahoms, first in their native language and later in Assamese, called? (A) Tawarikh (B) Buranjis (C) Prashastis (D) Vachanas **Answer: B**
Q480. Under which Ahom king (1696–1714) did Hinduism become the predominant state religion, while the monarchs still subtly retained their traditional tribal customs and rituals? (A) Sukapha (B) Rudra Singha (C) Gadadhar Singha (D) Pramatta Singha **Answer: B**
Q481. In South India (seventh to ninth centuries), who were the Nayanars and Alvars who spearheaded the devotional Bhakti movement? (A) Nayanars were saints devoted to Shiva, while Alvars were saints devoted to Vishnu (B) Nayanars were Buddhist monks, while Alvars were Jaina ascetics (C) Nayanars were royal tax collectors, while Alvars were court poets (D) Nayanars were temple architects, while Alvars were bronze sculptors **Answer: A**
Q482. The devotional Tamil hymns composed by the 12 Alvars were compiled in the sacred anthology titled: (A) Tevaram (B) Divya Prabandham (C) Tiruvacakam (D) Periyapuranam **Answer: B**
Q483. Which influential eighth-century philosopher born in Kerala propounded the doctrine of "Advaita", teaching the oneness of the individual soul (Atman) and the Ultimate Reality (Brahman)? (A) Ramanuja (B) Shankara (Adi Shankaracharya) (C) Madhvacharya (D) Basavanna **Answer: B**
Q484. Born in Tamil Nadu in the eleventh century, Ramanuja taught that intense devotion to Lord Vishnu leads to salvation and propounded the doctrine of: (A) Shuddhadvaita (B) Vishishtadvaita (qualified non-dualism) (C) Dvaita (dualism) (D) Sunyavada **Answer: B**
Q485. The Virashaiva movement initiated in twelfth-century Karnataka by Basavanna, Allama Prabhu, and Akkamahadevi fought vehemently against: (A) All forms of religious temple worship and caste/gender inequality (B) The cultivation of paddy in river valleys (C) Trade with foreign maritime merchants (D) The use of Kannada vernacular literature **Answer: A**
Q486. Which temple town in Maharashtra served as the sacred focal point for the Varkari Bhakti sect centered around devotion to Lord Vitthala (a form of Vishnu)? (A) Pandharpur (B) Shirdi (C) Nasik (D) Kolhapur **Answer: A**
Q487. What spiritual practice did the Nathpanthis, Siddhacharas, and Yogis advocate to achieve liberation through realization of the Ultimate Formless Reality? (A) Performing expensive royal yajnas with animal sacrifices (B) Meditation on the formless reality and rigorous training of the mind and body through Yogasanas, breathing exercises (Pranayama), and contemplation (C) Memorizing Sanskrit grammar texts without understanding their meaning (D) Isolating themselves strictly inside golden imperial palaces **Answer: B**
Q488. Which prominent Sufi saint established the Chishti Silsilah (order) in India and whose sacred dargah is situated at Ajmer, Rajasthan? (A) Baba Farid (B) Khwaja Muinuddin Chishti (C) Nizamuddin Auliya (D) Qutbuddin Bakhtiyar Kaki **Answer: B**
Q489. How did the fifteenth-sixteenth century weaver-poet Kabir express his profound rejection of major religious orthodoxies and caste prejudices? (A) Through fiery rhyming couplets called 'sakhis' and 'pads' composed in everyday spoken Hindi (Bhakha) (B) By writing complex legal treatises in classical Latin (C) By serving as the commander-in-chief of the Mughal artillery (D) By establishing segregated monasteries strictly for high-born aristocrats **Answer: A**
Q490. Guru Nanak established a sacred community kitchen where people of all castes, creeds, and genders ate together as equals, known as: (A) Dharamshala (B) Langar (C) Haramara (D) Sabha **Answer: B**
Q491. The Chera kingdom of Mahodayapuram (modern Kerala) in the ninth century was one of the earliest examples in the subcontinent of a dynasty using: (A) A regional language (Malayalam) and its script in official royal administrative inscriptions (B) French as the court language of diplomacy (C) Hieroglyphic pictograms carved on seashells (D) Strictly Arabic script across all public buildings **Answer: A**
Q492. The famous Jagannatha temple at Puri, Odisha, represents a unique synthesis because Lord Jagannatha was originally: (A) A local tribal wooden deity, later identified with Lord Vishnu by the Ganga dynasty rulers (B) A Greek maritime statue brought by Roman traders (C) A sculpture made of volcanic lava from Mount Vesuvius (D) A gold coin deposited by Chinese travelers **Answer: A**
Q493. The major classical dance form "Kathak" evolved from which original performance tradition in northern India? (A) Martial stick fights between palace guards (B) A class of storytellers (kathakars) in temples who enacted religious legends with gestures and songs, later patronized in Mughal courts and Lucknow (C) A harvest ritual performed exclusively by Himalayan sheep herders (D) A royal coronation duel between rival princes **Answer: B**
Q494. The bold, intense Himalayan school of miniature painting that developed around Himachal Pradesh in the late seventeenth century, exemplified by Bhanudatta's Rasamanjari, is known as: (A) Basohli style (B) Madhubani style (C) Warli style (D) Kalighat style **Answer: A**
Q495. In 1739, which Persian ruler invaded India, plundered Delhi, and carried away immense imperial wealth including the Peacock Throne and the Koh-i-Noor diamond? (A) Nadir Shah (B) Ahmad Shah Abdali (C) Genghis Khan (D) Murshid Quli Khan **Answer: A**
Q496. Who was the powerful Mughal nobleman who founded the autonomous state of Hyderabad in 1724 after serving as governor of the Deccan? (A) Nizam-ul-Mulk Asaf Jah (B) Saadat Khan Burhan-ul-Mulk (C) Murshid Quli Khan (D) Alivardi Khan **Answer: A**
Q497. Who was appointed subadar of Awadh in 1722, uniting the offices of Subadari, Diwani, and Faujdari to build an autonomous regional state? (A) Saadat Khan Burhan-ul-Mulk (B) Safdar Jung (C) Shuja-ud-Daula (D) Asaf-ud-Daula **Answer: A**
Q498. In the Maratha revenue administration expanded by Shivaji and the Peshwas, what was 'Chauth'? (A) A 25 percent tax on land revenue claimed by Maratha rulers from non-Maratha territories in exchange for protection from raids (B) A 50 percent tax on sea trade collected at Surat port (C) A royal fee levied on horse saddles purchased from Arabia (D) A voluntary temple donation given to Pandharpur priests **Answer: A**
Q499. In the eighteenth century, the Sikhs organized themselves under Kapur Singh into several bands (jathas) which united into a grand army called the: (A) Dal Khalsa (B) Mansab Fauj (C) Paik Bahini (D) Gond Sena **Answer: A**
Q500. Under which visionary ruler did the Jat kingdom of Bharatpur reach the zenith of its political, military, and architectural power in the mid-eighteenth century? (A) Churaman (B) Maharaja Suraj Mal (C) Badan Singh (D) Gokula **Answer: B**

Q501. The domain of the earth comprising the solid crust or the hard top layer of soil and rocks is known as the: (A) Hydrosphere (B) Lithosphere (C) Atmosphere (D) Biosphere
Answer: B
Q502. The narrow zone of contact between the lithosphere, hydrosphere, and atmosphere where life exists is called the: (A) Stratosphere (B) Biosphere (C) Mesosphere (D) Centrosphere **Answer: B**
Q503. What constitutes an "ecosystem" in environmental geography? (A) Only the manufactured machines and roads in an urban industrial park (B) A system formed by the interaction of all living organisms with each other and with the physical and chemical factors of their environment, linked by energy and nutrient transfer (C) A collection of artificial space satellites orbiting outer space (D) The political treaties signed between different sovereign countries **Answer: B**
Q504. Which of the following pairs correctly distinguishes a "biotic" component from an "abiotic" component of the natural environment? (A) Biotic: Plants; Abiotic: Land and minerals (B) Biotic: Granite rock; Abiotic: Microorganisms (C) Biotic: Sunlight; Abiotic: Fungi (D) Biotic: River water; Abiotic: Mountain forest **Answer: A**
Q505. On which date is "World Environment Day" celebrated globally every year to encourage awareness and action for the protection of our environment? (A) 22 April (B) 5 June (C) 16 September (D) 1 December **Answer: B**
Q506. The uppermost and thinnest layer over the earth's surface, extending about 35 km on continental masses and only 5 km on the ocean floors, is the: (A) Mantle (B) Crust (C) Outer core (D) Inner core **Answer; B**
Q507. The main mineral constituents of the continental crust are silica and alumina, termed "sial". What are the main mineral constituents of the oceanic crust, termed "sima"? (A) Silicon and manganese (B) Silica and magnesium (C) Silver and magnesium (D) Sodium and iron **Answer: B**
Q508. The innermost layer of the Earth has a radius of about 3500 km and is mainly made up of nickel and iron, which is termed: (A) Sima (B) Sial (C) Nife (D) Basalt **Answer: C**
Q509. When molten magma cools and solidifies, it forms primary rocks known as igneous rocks. What is the difference between extrusive and intrusive igneous rocks? (A) Extrusive rocks cool slowly inside the crust; intrusive rocks cool rapidly on the crust's surface. (B) Extrusive rocks form when molten lava cools rapidly on the earth's surface (e.g., basalt); intrusive rocks form when magma cools slowly deep within the earth (e.g., granite) (C) Extrusive rocks contain fossils; intrusive rocks dissolve in river water (D) Extrusive rocks are strictly man-made; intrusive rocks are extraterrestrial
Answer: B
Q510. Why are fossils of plants, animals, and other microorganisms predominantly preserved in sedimentary rocks rather than igneous or metamorphic rocks? (A) Sedimentary rocks are formed by volcanic explosions that flash-freeze animals. (B) Sediments transported by wind and water are deposited in layers and compressed over millions of years, trapping organic remains between them without melting them. (C) Magma chemically synthesizes animal skeletons during cooling. (D) High metamorphic heat prevents any decomposition of dead bones **Answer: B**
Q511. Under great heat and pressure, igneous and sedimentary rocks transform into metamorphic rocks. Which of the following represents an accurate rock transformation? (A) Clay changes into slate, and limestone changes into marble. (B) Granite changes directly into soft garden soil. (C) Basalt changes into loose desert sand. (D) Coal changes into liquid ocean water **Answer: A**
Q512. What is the "Rock Cycle" in geological science? (A) The continuous, cyclic transformation of one rock type into another over millions of years through melting, cooling, weathering, sedimentation, heat, and pressure (B) The seasonal rotation of boulders by river currents during the monsoon (C) The commercial recycling of gravel in urban road construction (D) The gravitational orbit of asteroids around the planet Mars **Answer: A**
Q513. What percentage of the total volume of the Earth is occupied by the crust, mantle, and core respectively? (A) Crust 1%, Mantle 84%, Core 15% (B) Crust 50%, Mantle 30%, Core 20% (C) Crust 33%, Mantle 33%, Core 34% (D) Crust 10%, Mantle 40%, Core 50% **Answer: A**
Q514. Forces that act in the interior of the earth causing sudden movements like earthquakes and volcanoes are called: (A) Exogenic forces (B) Endogenic forces (C) Atmospheric forces (D) Gravitational tidal forces **Answer: B**
Q515. In an earthquake, how is the "Focus" distinguished from the "Epicenter"? (A) The focus is the point on the surface directly above the epicenter. (B) The focus is the place in the crust where the seismic movement originates; the epicenter is the place on the surface directly above the focus. (C) The focus is a volcanic crater; the epicenter is a tsunami wave. (D) The focus is measured in kilometers; the epicenter is measured in degrees Celsius **Answer: B**
Q516. An earthquake is measured with a machine called a seismograph. The magnitude of the earthquake is measured on which scale? (A) Celsius scale (B) Richter scale (C) Beaufort scale (D) Kelvin scale **Answer: B**
Q517. As a river enters a plain, it twists and turns forming large bends known as meanders. Due to continuous erosion and deposition along sides, what landform is created when a meander loop cuts off from the main river? (A) Sand dune (B) Oxbow lake (C) Glacial cirque (D) Mushroom rock **Answer: B**
Q518. During periodic flooding, a river deposits layers of fine soil and sediments along its banks, forming a flat fertile floodplain. What are the raised natural embankments along the river banks called? (A) Levees (B) Moraines (C) Sea stacks (D) Gorges **Answer: A**
Q519. When coastal sea caves become enlarged by wave action until only the roof remains, they form sea arches. When further erosion breaks the roof and leaves only isolated vertical stone walls, these pillars are called: (A) Sand bars (B) Stacks (C) Spits (D) Lagoons **Answer: B**
Q520. Glaciers are "rivers of ice" that carve out deep hollows in mountain valleys. What are the ridges of rock fragments, sand, and gravel deposited by melting glaciers called? (A) Deltas (B) Glacial moraines (C) Loess plains (D) Levees
Answer: B
Q521. Why do rocks in hot arid deserts often erode into the shape of a mushroom, with a narrow base and wide top? (A) Desert rains dissolve only the lower roots of the rock chemically. (B) Wind carries abrasive sand grains close to the ground, eroding the lower section of the rock faster than the upper part. (C) Desert animals rub their horns strictly against the base of the rock. (D) Subterranean lava melts the bottom of the boulders. **Answer: B**
Q522. When wind transports very fine and light grains of sand over immense distances and deposits them over large continental areas, it forms vast yellowish silt plains called: (A) Barchans (B) Loess (C) Moraines (D) Meanders **Answer: B**
Q523. Which gas is the most plentiful in the earth's atmosphere, accounting for approximately 78% of clean dry air by volume? (A) Oxygen (B) Nitrogen (C) Carbon dioxide (D) Argon **Answer: B**
Q524. Why is carbon dioxide called a "greenhouse gas" in the atmosphere? (A) It turns all plants green through chemical absorption of moonlight. (B) It traps heat radiated from the earth's surface, preventing it from escaping into space and keeping the planet habitable. (C) It freezes water vapor into high-altitude snow clouds. (D) It absorbs cosmic ultraviolet rays exclusively in the stratosphere **Answer: B**
Q525. In which atmospheric layer, having an average height of about 13 km from the earth's surface, do almost all weather phenomena like rainfall, fog, and hailstorms take place? (A) Stratosphere (B) Troposphere (C) Mesosphere (D) Thermosphere **Answer: B**
Q526. Why is the Stratosphere (extending up to 50 km) considered ideal for flying commercial jet aeroplanes? (A) It is filled with thick moisture and high humidity. (B) It is free from clouds and turbulent weather phenomena, with steady horizontal air movements. (C) It has higher atmospheric pressure than sea level. (D) It contains no oxygen so engines never experience friction **Answer: B**
Q527. In which third atmospheric layer (extending up to 80 km) do meteorites burn up upon entering from space due to friction? (A) Troposphere (B) Mesosphere (C) Thermosphere (D) Exosphere **Answer: B**
Q528. The Thermosphere (80–400 km) includes the "Ionosphere" layer, which is scientifically crucial because: (A) It generates all global cyclonic rainfall. (B) It contains electrically charged ions that reflect radio waves transmitted from the earth back to the surface, enabling wireless communication. (C) It maintains a constant freezing temperature of -200 degrees Celsius. (D) It stores all the liquid freshwater of the planet **Answer: B**
Q529. What is "Insolation", and why does it decrease progressively from the Equator towards the Earth's poles? (A) Insolation is atmospheric moisture, which condenses into ice at the poles. (B) Insolation is the incoming solar energy intercepted by the Earth; the curved surface causes sun rays to strike at a lower, oblique angle towards the poles, spreading energy over a larger area. (C) Insolation is wind speed, which slows down near glaciers. (D) Insolation is the density of volcanic ash in the air **Answer: B**
Q530. How does atmospheric pressure dictate the direction of horizontal wind movement across the globe? (A) Air always moves from low-pressure areas to high-pressure areas. (B) Air always moves from areas of high pressure to areas of low pressure. (C) Air moves in unpredictable zig-zag paths Independent of pressure gradients. (D) Air remains completely stationary unless pushed by ocean waves **Answer: B**
Q531. Which of the following correctly classifies the three major types of winds? (A) Permanent: Trade winds & Westerlies; Seasonal: Monsoons; Local: Loo and Sea/Land breezes (B) Permanent: Hurricanes; Seasonal: Tornadoes; Local: Cyclones (C) Permanent: Sea breeze; Seasonal: Trade winds; Local: Monsoons (D) Permanent: Loo; Seasonal: Polar winds; Local: Westerlies **Answer: A**
Q532. When warm moist air is forced to rise over a high mountain barrier, cools, condenses, and precipitates on the windward slope, it causes: (A) Convectional rainfall (B) Orographic (relief) rainfall (C) Cyclonic rainfall (D) Frontal rainfall **Answer: B**
Q533. The continuous process by which water circulates between the oceans, atmosphere, and land through evaporation, condensation, and precipitation is known as the: (A) Carbon cycle (B) Water cycle (hydrological cycle) (C) Nitrogen cycle (D) Rock cycle **Answer: B**
Q534. Approximately what percentage of the total water on the Earth's surface is contained in the seas and oceans (saline (salty) water? (A) 50.5% (B) 71.0% (C) 97.3% (D) 2.7% **Answer: C**
Q535. Why do swimmers easily float without sinking in the Dead Sea in Israel? (A) The water contains anti-gravity volcanic minerals. (B) The water has an extremely high salinity (around 340 grams of salt per liter), making the water dense enough to buoy human bodies easily. (C) The water is completely frozen beneath the surface. (D) Powerful magnetic fields in the sea floor push people upward **Answer: B**
Q536. A tsunami is a huge seismic ocean wave generated primarily by: (A) Gentle offshore breezes blowing at night (B) Undersea earthquakes, volcanic eruptions, or massive underwater landslides that displace massive volumes of ocean water (C) The gravitational alignment of distant constellations (D) High evaporation rates over equatorial coral reefs **Answer: B**
Q537. How do "Spring Tides" differ from "Neap Tides"? (A) Spring tides occur only in March; neap tides occur in November. (B) During full moon and new moon, the sun, moon, and earth are in a straight line, producing the highest tides (spring tides); when the moon is in its first and last quarters, the sun and moon pull at right angles, producing lower tides (neap tides) (C) Spring tides occur in freshwater rivers; neap tides occur in the Pacific Ocean. (D) Spring tides are caused by wind; neap tides are caused by water salinity
Answer: B
Q538. Why are high tides commercially advantageous for international shipping and harbor navigation? (A) They freeze the port water into smooth ice ramps. (B) They raise the water level close to the shore, allowing deep-draft ships to enter shallow river estuaries and harbors (such as Kolkata port) safely. (C) They push fish away from ports so cargo ships don't hit them. (D) They stop all ocean currents from flowing **Answer: B**
Q539. Which of the following accurately identifies a major warm ocean current and a cold ocean current? (A) Warm: Labrador Current; Cold: Gulf Stream (B) Warm: Gulf Stream; Cold: Labrador Current (C) Warm: Peru (Humboldt) Current; Cold: Kuroshio Current (D) Warm: California Current; Cold: Brazil Current **Answer: B**
Q540. The oceanic zones where warm and cold currents meet (such as around Newfoundland, Canada, and off the coast of Japan) are internationally renowned for: (A) Providing the world's richest marine fishing grounds, though accompanied by foggy navigation hazards. (B) The complete absence of all marine plankton and fish. (C) Serving as permanent underwater ice bridges. (D) Extremely high water temperatures exceeding 90 degrees Celsius **Answer: A**
Q541. Why do the trees of Tropical Evergreen Forests (such as those in the Amazon and Western Ghats) not shed their leaves simultaneously? (A) The trees have no roots and absorb water directly from lightning strikes. (B) There is no distinct dry season, and the warm, rainy climate allows different species to shed leaves at different times, keeping the forest green year-round. (C) The leaves are made of impermeable waxy plastic that never decays. (D) Forest fires annually burn off the dead twigs **Answer: B**
Q542. Why are the Mediterranean lands (around southern Europe, northern Africa, and California) known as the "Orchards of the World"? (A) They cultivate solely rice and wheat through flood irrigation. (B) They specialize in the extensive cultivation of citrus fruits (oranges, figs, olives, grapes) due to hot dry summers and mild rainy winters. (C) They allow giant pine and spruce trees for paper pulp exclusively. (D) They have no native soil and grow fruit trees in hydroponic ponds **Answer: B**
Q543. What is a primary economic use of the tall, softwood evergreen trees (chir, pine, cedar) harvested from the subpolar Coniferous Forests (Taiga)? (A) Manufacturing paper, newsprint, matchboxes, and packing boxes from soft wood pulp. (B) Extracting palm oil for confectionery industries (C) Making heavy railway iron tracks (D) Weaving luxury silk fabrics **Answer: A**
Q544. Which of the following correctly matches the temperate grassland with its continental location? (A) Prairies — North America; Pampas — South America; Steppes — Eurasia; Veld — South Africa; Downs — Australia (B) Prairies — Australia; Pampas — Eurasia; Steppes — Africa; Veld — North America; Downs — Prairies — South Africa; Pampas — Australia; Steppes — South America (D) Prairies — Antarctica; Pampas — Greenland; Steppes — Madagascar
Answer: A
Q545. In the extreme polar regions where the growing season is very short, vegetation is limited to mosses, lichens, and very small shrubs. This is known as: (A) Savanna vegetation (B) Tundra vegetation (C) Selvas (D) Mangrove vegetation
Answer: B
Q546. In the Amazon rainforest basin, what are the large thatched apartment-like communal houses with steeply slanting roofs called? (A) Gompas (B) Malocas (C) Igloos (D) Tandas **Answer: B**
Q547. The blind freshwater dolphin found in the rivers Ganga and Brahmaputra, whose presence indicates the cleanliness and health of river water, is locally known as: (A) Piranha (B) Susu (C) Gharial (D) Manseer **Answer: B**
Q548. Which of the following is the world's largest hot desert, spanning eleven countries across North Africa with an area of about 8.54 million square kilometers? (A) Gobi Desert (B) Sahara Desert (C) Kalahari Desert (D) Thar Desert **Answer: B**
Q549. The nomadic tribes of the Sahara Desert, such as the Bedouins and Tuaregs, rear livestock (goats, sheep, camels) and wear heavy robes primarily to: (A) Conceal themselves from wild animals in dense forests (B) Protect themselves against blistering dust storms, scorching daytime heat, and freezing desert winds at night (C) Perform religious dances during royal coronations (D) Keep themselves dry from constant tropical rains **Answer: B**
Q550. In the cold desert of Ladakh, the Tibetan antelope (Chiru) has been heavily hunted because of its fine, light, and exceptionally warm wool known as: (A) Cashmere (B) Shahtoosh (C) Mohair (D) Angora **Answer: B**
Q551. In a democratic country like India, what is the core principle of "Universal Adult Franchise"? (A) Only citizens with university degrees and property ownership can vote. (B) Every adult citizen aged 18 or above has the right to cast one vote, and each vote has equal value regardless of wealth, gender, caste, or religion. (C) Only government officials are eligible to participate in parliamentary elections. (D) Citizens vote based on the amount of taxes they pay to the state **Answer: B**
Q552. Which fundamental provision of the Indian Constitution prohibits discrimination against any citizen on grounds only of religion, race, caste, sex, or place of birth? (A) Article 15 (B) Article 352 (C) Article 370 (D) Article 44 **Answer: A**
Q553. In his famous autobiography "Joothan", which prominent Dalit writer described the painful caste discrimination and humiliation he suffered in school when forced to sweep school grounds instead of studying? (A) B.R. Ambedkar (B) Omprakash Valmiki (C) Kanshi Ram (D) Periyar E.V. Ramasamy **Answer: B**
Q554. Which was the first Indian state to introduce the Midday Meal Scheme in government elementary schools in 2001, prior to the Supreme Court directing all states to implement it? (A) Kerala (B) Tamil Nadu (C) Maharashtra (D) West Bengal
Answer: B
Q555. How has the Midday Meal Scheme contributed significantly to advancing social equality in Indian government schools? (A) Children of all castes sit and eat the cooked meal together. Dalit women are often employed as cooks, and school enrollment and attendance of poor children have surged. (B) It replaced all classroom textbooks with cooking instruction manuals. (C) It privatized all public schooling infrastructure. (D) It restricted school admissions solely to rural children. **Answer: A**
Q556. The Civil Rights Movement in the United States in the late 1950s and 1960s, demanding equal rights for African-Americans, gained historic momentum when who refused to give up her bus seat to a white man in 1955? (A) Harriet Tubman (B) Rosa Parks (C) Sojourner Truth (D) Coretta Scott King **Answer: B**

Q557. What did the landmark United States Civil Rights Act of 1964 explicitly prohibit? (A) Discrimination based on race, color, religion, or national origin in public accommodations, schools, and employment (B) The purchase of automobiles by foreign tourists (C) The construction of public libraries in rural districts (D) Maritime commercial shipping between continents **Answer: A**

Q558. The Rights of Persons with Disabilities Act, 2016 passed by the Indian Parliament states that persons with disabilities have equal rights and that the government must provide: (A) Permanent free luxury private transport and overseas vacations (B) Free education, reservation in government jobs, barrier-free access to all public buildings, ramps, and non-discrimination (C) Compulsory exemption from all judicial laws of the country (D) Segregated residential towns separated from general public society **Answer: B**

Q559. Who is the healthcare service run by the government called "Public" healthcare? (A) It is funded by public tax revenues paid by citizens and is mandated to provide healthcare to all citizens either free or at very low cost (B) It is owned by international multinational pharmaceutical corporations (C) Doctors in public hospitals are forbidden from charging medical fees under any circumstances (D) It operates only in public open parks without hospital buildings **Answer: A**

Q560. In comparison to public healthcare centers, private healthcare facilities in India are characterized by: (A) Complete government financing and free distribution of medicine (B) Concentration in urban cities, profit-oriented high costs, advanced diagnostic equipment, and expensive branded medicines (C) Exemption from municipal and income taxes (D) Strict operation only in remote rural tribal villages **Answer: B**

Q561. In the landmark case of Hakim Sheik (1996), a member of Paschim Banga Khet Majoor Samity who fell from a train and was denied treatment in government hospitals, what did the Supreme Court rule? (A) Hospitals have no constitutional obligation towards daily-wage agricultural workers (B) Article 21 guarantees the Fundamental Right to Life, which includes the right to health; the state must provide timely emergency medical treatment and compensate the victim (C) Only private nursing homes are liable to treat accidental railway injuries (D) Railway authorities are strictly exempted from passenger safety **Answer: B**

Q562. In 1996, the Kerala government made a major decentralized policy shift by earmarking what percentage of the state's total budget directly to rural Panchayats? (A) 10% (B) 40% (C) 75% (D) 90% **Answer: B**

Q563. Costa Rica is considered one of the healthiest nations in Central America because its national constitution took the visionary decision to: (A) Abolish the national army and channel military expenditure into public health, clean water, sanitation, and basic education (B) Outsource all national hospitals to foreign private hedge funds (C) Ban all physical exercise and mandate complete indoor rest (D) Eliminate all medical taxes and import uninspected pharmaceuticals **Answer: A**

Q564. Why do thousands of overseas patients (medical tourists) travel to India every year for medical treatment? (A) Indian hospitals provide world-class specialized medical treatments and surgeries at a fraction of the cost incurred in Western countries (B) India offers free air travel for all hospital visitors (C) Medicines in India do not require clinical trials or doctor prescriptions (D) International health insurance mandates surgery strictly in South Asia **Answer: A**

Q565. A large percentage of communicable illnesses in India, such as diarrhea, dysentery, cholera, and hepatitis, are water-borne diseases that can be effectively prevented by: (A) Providing clean, potable, and safe drinking water along with proper sanitation infrastructure to all communities (B) Prescribing expensive antibiotics without boiling water (C) Closing down primary health centers during the rainy season (D) Restricting the consumption of leafy vegetables exclusively **Answer: A**

Q566. In the administration of public and private hospitals, what does the abbreviation 'OPD' stand for? (A) Out Patient Department (B) Operative Pediatric Division (C) Official Pharmacy Directorate (D) Overnight Patient Dormitory **Answer: A**

Q567. How is a Member of the Legislative Assembly (MLA) elected in India? (A) Directly elected by the adult voters of a specific electoral constituency through universal adult franchise (B) Nominated by the President of India on the recommendation of the Governor (C) Appointed by civil service commission examinations (D) Elected exclusively by village sarpanches in district headquarters **Answer: A**

Q568. In a state legislative election, a political party forms the ruling government when it secures: (A) A simple majority, having won more than half the total number of assembly constituencies in the state (B) The largest number of votes in the capital city only (C) Approval from international election monitoring agencies (D) Exactly one-third of the total parliamentary seats **Answer: A**

Q569. Who officially appoints the Chief Minister and other council ministers of a state after the majority party selects its leader? (A) The Chief Justice of the High Court (B) The Governor of the State (C) The Speaker of the Lok Sabha (D) The Chief Election Commissioner **Answer: B**

Q570. What is the constitutional and democratic function of the "Opposition" in the State Legislative Assembly? (A) To physically block government officials from entering government offices (B) To question government policies, highlight public grievances, scrutinize budget expenditures, and suggest alternative legislative proposals (C) To conduct military operations against neighboring state borders (D) To dissolve the High Court whenever laws are passed **Answer: B**

Q571. During a session of the Legislative Assembly, what power does an individual MLA possess? (A) An MLA can ask questions to relevant ministers, express opinions on government work, suggest actions, and debate legislative bills (B) An MLA can unilaterally issue currency notes for their constituency (C) An MLA can declare emergency military mobilization across the nation (D) An MLA can overturn rulings of the Supreme Court of India **Answer: A**

Q572. Why do government ministers hold "Press Conferences" after major legislative decisions or emergency crises? (A) To collect advertising fees from private television channels (B) To explain government actions, policies, and relief measures to the journalists, who report these developments to the public through newspapers and broadcast media (C) To prevent journalists from asking critical questions (D) To announce the closure of all private publishing houses **Answer: B**

Q573. In the Indian democratic parliamentary framework, how does a Cabinet Minister in a state carry dual responsibilities? (A) They serve simultaneously as a high court judge and police chief (B) They are an elected MLA representing their local constituency, while also heading a specific executive department (e.g., Education, Health, PWD) for the entire state (C) They run both a private corporation and a municipal school (D) They govern both a state constituency and an overseas diplomatic embassy **Answer: B**

Q574. In state governance, how is the "Executive" distinguished from the "Legislature"? (A) The Legislature consists of all elected MLAs who debate and enact laws; the Executive refers to the Chief Minister, ministers, and civil servants who administer and implement laws (B) The Legislature is appointed by the Governor; the Executive is elected by high school students (C) The Legislature commands the army; the Executive drafts textbooks (D) The Legislature manages private banks; the Executive regulates municipal garbage **Answer: A**

Q575. According to anthropological research in the 1920s regarding children in the Pacific Trobriand Islands, what distinct social pattern was observed? (A) Children attended boarding military academies from age five (B) Children did not go to formal school; young boys learned fishing and coconut planting from older youth, and girls engaged in weaving and childcare with rigid gender boundaries (C) Girls were prohibited from leaving the house until marriage (D) Boys were exclusively trained in metal blacksmithing by royal decree **Answer: B**

Q576. How did the school environment in 1960s small-town Madhya Pradesh socialize boys and girls differently regarding public spaces? (A) Girls walked home quickly in purposeful silent groups, viewing streets only as a means to reach home safely, while boys used streets to stand around, play, and loiter (B) Boys were confined to a central courtyard while girls played sports in open public fields (C) Girls wore military uniforms and rode motorcycles to school (D) Boys were required to perform four hours of daily cooking after school classes **Answer: A**

Q577. Why is women's domestic labor (cooking, cleaning, washing, childcare, and eldercare) described as "invisible and devalued" across many societies? (A) It does not produce tangible food or clean clothes (B) It is assumed to be "natural" work for women that requires no effort, receives no monetary payment, and is therefore culturally not recognized as real work (C) It is performed strictly by automated electrical robots (D) It is carried out only during total darkness at midnight **Answer: B**

Q578. What is meant by the sociological term "Double Burden" experienced by many contemporary working women? (A) Paying double income tax compared to men (B) Carrying two physical bags when traveling to the workplace (C) Managing full-time domestic household duties and childcare inside the home alongside working in paid employment outside the home (D) Studying for two university degrees simultaneously **Answer: C**

Q579. To ease the domestic burden on working mothers and ensure equal employment opportunities, Indian law mandates that organizations with more than 30 female employees must provide: (A) Free air tickets for domestic vacations (B) Crèche (childcare daycare) facilities within or near the workplace (C) Private luxury cars for commuting (D) Exemption from working more than a day a week **Answer: B**

Q580. How does giving cars, guns, and construction kits to boys while giving dolls, cooking sets, and dress-up items to girls reinforce gender stereotypes from childhood? (A) It prepares children for immediate employment at age six (B) It subtly conditions children into believing that men and women have rigidly segregated, unequal roles in public life and domestic caregiving (C) It ensures that boys become professional toy designers (D) It improves physical agility in equal measure across both genders **Answer: B**

Q581. What was social reformer Ramabai (1858–1922) conferred the distinguished title of "Pandita"? (A) She served as the prime minister of a princely state (B) She could read and write Sanskrit, a remarkable scholarly achievement denied to women in her era, and founded the Mukti Mission at Khedgaon for widows and destitute women (C) She constructed the grand railway terminus in Bombay (D) She served as a general in the British Indian army **Answer: B**

Q582. In 1905, before learning English fully, Rokeya Sakhawat Hossain authored the visionary feminist science-fiction story "Sultana's Dream", which depicted: (A) A utopian world ("Ladyland") where women were scientists ruling society through intellect, solar technology, and aerial flying machines while men were secluded in the interior purdah (B) A historical novel on Mughal harem politics (C) A manual on maritime trade with European shipping merchants (D) A poem describing the construction of the Taj Mahal **Answer: A**

Q583. Who was the nineteenth-century Bengali housewife who secretly taught herself to read religious texts in her kitchen and composed tender stanzas that, upon publication, became the first full autobiography by an Indian woman? (A) Sarojini Naidu (B) Rashsundari Devi (C) Tarabai Shinde (D) Kasturba Gandhi **Answer: B**

Q584. Laxmi Lakra, a young tribal woman from Jharkhand, broke stereotypes and gender barriers by becoming: (A) The first female pilot of an international supersonic spacecraft (B) The first female engine driver (locomotive pilot) for Northern Railways (C) The first female judge of the International Court of Justice (D) The first female mining geologist to discover coal **Answer: B**

Q585. Sustained public campaigning and street protests by women's organizations in India led to the landmark enactment in 2006 of a civil law protecting women against: (A) Domestic violence (physical, emotional, verbal, and economic abuse inside the home) (B) Payment of municipal electricity tariffs (C) Traveling on interstate overnight bus services (D) Opening savings bank accounts in commercial banks **Answer: A**

Q586. In 1997, the Supreme Court of India formulated binding legal guidelines (the Vishakha guidelines) specifically directed at: (A) Preventing and addressing sexual harassment of women at their workplaces and educational institutions (B) Banning women from working night shifts in manufacturing mills (C) Fixing maximum retail prices for handwoven cotton sarees (D) Making it compulsory military service for female college graduates **Answer: A**

Q587. Why are newspapers, magazines, television, radio, and internet portals collectively referred to as "Mass Media"? (A) They possess large physical weight and mass (B) They reach millions of people (masses) across the country and around the globe simultaneously (C) They can only be operated by heavy industrial manufacturing companies (D) They are read exclusively during religious church masses **Answer: B**

Q588. Why are most television news channels and major newspapers in modern democracies owned and controlled by large corporate business conglomerates? (A) Television production technologies (studios, satellites, cameras, transmitters) and salaries of staff require colossal capital investment that only big corporations can finance through commercial advertising (B) The government completely prohibits private individuals from owning cameras (C) News anchors are legally mandated to work as corporate bankers (D) Printing presses can only be imported by petroleum refineries **Answer: A**

Q589. What is "Censorship" by the government in relation to media communication? (A) The financial subsidy given to print independent poetry books (B) The legal power of the state to suppress or prohibit certain news stories, film scenes, or songs from being published or broadcast to the public (C) The mandatory installation of solar antennas on all television towers (D) The free distribution of newspapers to school libraries **Answer: B**

Q590. How does mass media "set the agenda" in a democratic society? (A) By dictating the daily calendar of all corporate offices (B) By choosing which specific issues, stories, and events to highlight, thereby influencing public opinion, national conversations, and what people think about (C) By replacing all classroom examinations with television quizzes (D) By publishing flight schedules for international airlines **Answer: B**

Q591. What is "Khabar Lahriya", a famous local fortnightly newspaper launched by a group of Dalit women in the Chitrakoot district of Uttar Pradesh? (A) A local newspaper written in the Bundeli dialect covering local caste discrimination, violence against women, and panchayat corruption (B) A fashion magazine advertising luxury foreign cars (C) A medical journal published in classical Sanskrit (D) A stock market bulletin analyzing Wall Street investments **Answer: A**

Q592. In modern advertising, what does "branding" a product fundamentally accomplish? (A) It stamps a unique name, logo, and emotional association on a commodity to differentiate it from generic unbranded goods in the market (B) It reduces the quality of the product to save on production costs (C) It allows goods to be sold without paying any sales tax (D) It guarantees that the product will never spoil over fifty years **Answer: A**

Q593. How do "Social Advertisements" differ fundamentally from commercial product advertisements? (A) They promote brand new mobile phone models to generate corporate profits (B) They are issued by governments or public organizations to convey vital public service messages regarding health, safe driving, immunization, and environmental protection (C) They are shown only in luxury movie theater screens (D) They require viewers to purchase expensive merchandise **Answer: B**

Q594. Why are goods in weekly markets (haats) usually available at much cheaper prices than in permanent brick-and-mortar retail shops? (A) Shopkeepers in weekly markets do not incur heavy permanent overhead expenses like shop rent, municipal taxes, electricity bills, or hired wages (B) Goods sold in weekly markets are stolen from factories (C) The products have no physical manufacturing costs (D) The government pays for all goods sold in weekly markets **Answer: A**

Q595. In the chain of distribution markets, what is the specific role of the "Wholesale Trader"? (A) To sell individual units of vegetables directly to walking consumers on footpaths (B) To buy goods in massive bulk quantities directly from producers/farmers and sell them in smaller lots to intermediate traders and retail shopkeepers (C) To manufacture all plastic containers used in shipping (D) To fix the daily foreign exchange rates of national currencies **Answer: B**

Q596. Why was Swapna, a small cotton farmer in Kurnool (Andhra Pradesh), forced to sell her harvested cotton to the local trader at a price significantly below the market rate? (A) The agricultural market yard was completely closed due to flooding (B) She had borrowed money from the local trader at high interest to purchase seeds and fertilizers on the condition that she must sell all her cotton to him (C) Her cotton was contaminated with synthetic paint chemicals (D) The state government had banned the open sale of raw cotton **Answer: B**

Q597. In the bi-weekly cloth market of Erode (Tamil Nadu), how does the "Putting-Out System" between merchants and handloom/powerloom weavers operate? (A) Weavers own large department stores in international cities (B) The merchant supplies yarn to weavers and orders them to weave cloth according to specifications; the merchant pays low weaving wages and takes the finished cloth, leaving weavers dependent for raw materials and market access (C) The government directly employs all weavers as permanent civil servants (D) Weavers sell directly to international supermarket consumers online **Answer: B**

Q598. How do "Weavers' Cooperatives" successfully counter the economic exploitation of the putting-out system? (A) Weavers unite to procure yarn collectively, share processing work, and market the finished cloth directly to government agencies and consumers, bypassing predatory merchants (B) They destroy all powerloom machinery to prevent production (C) They stop weaving cloth and switch to diamond mining (D) They mandate that all cloth must be given away for free **Answer: A**

Q599. In the global supply chain of a cotton shirt manufactured in India and sold in a high-end department store in the USA, who extracts the largest share of the profit margin? (A) The small cotton farmer who grew the crop (B) The garment factory worker who stitched the shirt (C) The large international retail business corporation that markets and sells the shirt at a high retail price (D) The weaver who operated the handloom **Answer: C**

Q600. The Tawa Matsya Sangh (TMS) in Madhya Pradesh is an inspiring example of people organizing a cooperative federation to successfully fight for: (A) The fishing rights of displaced forest dwellers and villagers who lost their homes due to the construction of the Tawa dam (B) The privatization of state wildlife sanctuaries (C) The eviction of tribal communities from forest lands (D) The installation of international casino resorts on river banks SECTION: GENERAL KNOWLEDGE (200 Questions) **Answer: A**

Q601. What is the capital city of the southern Indian state of Kerala? (A) Thiruvananthapuram (B) Kochi (C) Kozhikode (D) Thrissur **Answer: A**

Q602. Which is the northernmost Union Territory of India, established following the Jammu and Kashmir Reorganisation Act in 2019? (A) Jammu and Kashmir (B) Ladakh (C) Himachal Pradesh (D) Uttarakhand **Answer: B**

Q603. Through how many Indian states does the Tropic of Cancer (23.5° N latitude) pass? (A) 6 (B) 7 (C) 8 (D) 9 **Answer: C**

Q604. Which Indian state has the longest mainland coastline, stretching over 1,600 kilometers? (A) Gujarat (B) Andhra Pradesh (C) Tamil Nadu (D) Maharashtra **Answer: A**

Q605. Which major peninsular river in India is frequently termed "Dakshin Ganga" (Ganga of the South) owing to its great length and catchment basin? (A) Krishna (B) Godavari (C) Mahanadi (D) Kaveri **Answer: B**

Q606. Majuli, recognized as the world's largest inhabited river island, is formed by which river in the state of Assam? (A) Ganga (B) Teesta (C) Brahmaputra (D) Barak **Answer: C**

Q607. The Standard Meridian of India (82°30' E longitude), which determines Indian Standard Time (IST), passes closest to which city? (A) Patna (B) Bhopal (C) Jaipur (D) Mirzapur **Answer: D**

Q608. Which Indian state shares international land borders with three distinct foreign countries: Nepal to the west, Bhutan to the east, and China to the north? (A) Sikkim (B) Arunachal Pradesh (C) Himachal Pradesh (D) Assam **Answer: A**

Q609. What is the name of the highest peak in the ancient Aravalli mountain range, located near Mount Abu in Rajasthan? (A) Anamudi (B) Doddabetta (C) Guru Shikhar (D) Dhupgarh **Answer: C**

Q610. The name of which Indian state literally means "Land of Five Waters" or "Five Rivers", referring to the tributaries of the Indus river system? (A) Haryana (B) Punjab (C) Gujarat (D) Rajasthan **Answer: B**

Q611. Who served as the Chairman of the Drafting Committee of the Constituent Assembly that drafted the Constitution of India? (A) Dr. B. R. Ambedkar (B) Dr. Rajendra Prasad (C) Jawaharlal Nehru (D) Sardar Vallabhbhai Patel **Answer: A**

Q612. On which historic date did the Constitution of India come into full legal effect, celebrated annually as Republic Day? (A) 15th August 1947 (B) 26th November 1949 (C) 26th January 1950 (D) 2nd October 1950 **Answer: C**
Q613. What is the minimum voting age for Indian citizens in general democratic elections? (A) 16 years (B) 18 years (C) 21 years (D) 25 years **Answer: B**
Q614. In which Part of the Indian Constitution are the Fundamental Rights of citizens enshrined (Articles 12 to 35)? (A) Part III (B) Part II (C) Part IV (D) Part IVA **Answer: A**
Q615. Under Article 53(2) of the Indian Constitution, who is the Supreme Commander of the Defence Forces of the Union of India? (A) Prime Minister of India (B) Chief of Defence Staff (C) Minister of Defence (D) President of India **Answer: D**
Q616. Under Article 21A of the Indian Constitution, the Right of Children to Free and Compulsory Education (RTE) applies to which age group? (A) 3 to 10 years (B) 6 to 14 years (C) 5 to 16 years (D) 7 to 15 years **Answer: B**
Q617. What is the standard tenure of an elected member of the Rajya Sabha (Council of States)? (A) 4 years (B) 5 years (C) 6 years (D) Permanent without term **Answer: C**
Q618. Which specific Article of the Constitution of India abolished the practice of "Untouchability" and made its enforcement a punishable offence? (A) Article 17 (B) Article 14 (C) Article 19 (D) Article 21 **Answer: A**
Q619. According to Article 85 of the Indian Constitution, what is the maximum permissible time interval between two consecutive sessions of Parliament? (A) 3 months (B) 6 months (C) 9 months (D) 12 months **Answer: B**
Q620. Who was the first Chief Justice of the Supreme Court of independent India upon its establishment in January 1950? (A) M. Patanjali Sastri (B) Mehr Chand Mahajan (C) Sudhi Ranjan Das (D) Hiralal Jekisundas Kania **Answer: D**
Q621. Which majestic animal was declared as the National Animal of India in 1973 following the launch of Project Tiger? (A) Asiatic Lion (B) Royal Bengal Tiger (C) Indian Elephant (D) Snow Leopard **Answer: B**
Q622. Which endangered creature was officially designated as the National Aquatic Animal of India in 2009? (A) Gharial (B) Olive Ridley Turtle (C) Ganges River Dolphin (D) Golden Mahseer **Answer: C**
Q623. The national motto "Satyameva Jayate", inscribed in Devanagari script below the Lion Capital of Ashoka, is derived from which sacred text? (A) Mundaka Upanishad (B) Katha Upanishad (C) Rigveda (D) Bhagavad Gita **Answer: A**
Q624. Who authored the revered National Song of India, "Vande Mataram", originally featured in the Bengali novel Anandamath? (A) Rabindranath Tagore (B) Kazi Nazrul Islam (C) Bankim Chandra Chattopadhyay (D) Sarojini Naidu **Answer: C**
Q625. What is the official legal ratio of the width (height) to the length of the National Flag of India (Tiranga)? (A) 1:2 (B) 2:3 (C) 3:4 (D) 3:5 **Answer: B**
Q626. How many spokes are depicted in the navy blue Ashoka Chakra located in the center of the white band of the National Flag? (A) 16 (B) 20 (C) 22 (D) 24 **Answer: D**
Q627. Which tree, representing longevity and immortality with its spreading aerial roots, is the National Tree of India? (A) Banyan Tree (Ficus benghalensis) (B) Peepal Tree (Ficus religiosa) (C) Neem Tree (Azadirachta indica) (D) Sal Tree (Shorea robusta) **Answer: A**
Q628. Who was the freedom fighter and scholar from Andhra Pradesh who designed the basic model of the Indian National Flag adopted by the Constituent Assembly in July 1947? (A) Tanguturi Prakasam (B) Potti Sreeramulu (C) Pingali Venkayya (D) K. Kamaraj **Answer: C**
Q629. What is the official standard playing time for the full rendition of the National Anthem of India, "Jana Gana Mana"? (A) 52 seconds (B) 48 seconds (C) 60 seconds (D) 65 seconds **Answer: A**
Q630. Which animal was formally declared as India's "National Heritage Animal" in October 2010 to strengthen its conservation efforts? (A) One-horned Rhinoceros (B) Indian Elephant (C) Gaur (Indian Bison) (D) Asiatic Wild Water Buffalo **Answer: B**
Q631. The Taj Mahal in Agra and the Red Fort in Delhi were commissioned by which Mughal Emperor? (A) Akbar (B) Shah Jahan (C) Jahangir (D) Babur **Answer: B**
Q632. The famous rust-resistant ancient Iron Pillar dating to the Gupta period (circa 4th century CE) stands inside which monument complex in New Delhi? (A) Humayun's Tomb (B) Safdarjung Tomb (C) Qutb Minar Complex (D) Purana Qila **Answer: C**
Q633. The famous 13th-century Sun Temple, engineered in the shape of a massive stone chariot with 24 carved wheels pulled by seven horses, is situated at: (A) Konark, Odisha (B) Modhera, Gujarat (C) Hampi, Karnataka (D) Khajuraho, Madhya Pradesh **Answer: A**
Q634. The Great Stupa at Sanchi in Madhya Pradesh, renowned for its ornate toranas (gateways), was originally commissioned by which Mauryan Emperor? (A) Chandragupta Maurya (B) Bindusara (C) Brihadratha (D) Emperor Ashoka **Answer: D**
Q635. The world-famous rock-cut Buddhist caves of Ajanta are located in which administrative district of Maharashtra? (A) Pune (B) Chhatrapati Sambhajinagar (Aurangabad) (C) Nashik (D) Kolhapur **Answer: B**
Q636. Which ancient residential center of higher learning, visited by Chinese pilgrim Xuanzang in the 7th century, was situated in modern-day Bihar? (A) Nalanda University (B) Takshashila University (C) Vikramashila University (D) Vallabhi University **Answer: A**
Q637. The grand Buland Darwaza ("Door of Victory") at Fatehpur Sikri was constructed by Mughal Emperor Akbar to commemorate his military victory over which province? (A) Kashmir (B) Bengal (C) Gujarat (D) Malwa **Answer: C**
Q638. Hawa Mahal ("Palace of Winds") in Jaipur, famous for its 953 ornate jharokhas (casements), was built in 1799 by which Rajput ruler? (A) Maharaja Man Singh I (B) Maharaja Jai Singh II (C) Maharaja Jaswant Singh (D) Maharaja Sawai Pratap Singh **Answer: D**
Q639. The monolithic rock-cut Kailash Temple (Cave 16) at Ellora, carved vertically out of a single basalt cliff, was patronized by King Krishna I of which royal dynasty? (A) Chalukya dynasty (B) Rashtrakuta dynasty (C) Pallava dynasty (D) Satavahana dynasty **Answer: B**
Q640. The UNESCO World Heritage monuments at Hampi on the banks of the Tungabhadra River served as the glorious capital of which medieval empire? (A) Vijayanagara Empire (B) Bahmani Sultanate (C) Hoysala Empire (D) Kakatiya Dynasty **Answer: A**
Q641. Kathakali (known for elaborate makeup and facial expressions) and Mohiniyattam originated in which Indian state? (A) Tamil Nadu (B) Andhra Pradesh (C) Kerala (D) Karnataka **Answer: C**
Q642. Bihu, an agricultural and seasonal festival featuring traditional dhol drums and pepa flutes, is the primary cultural festival of which state? (A) Tripura (B) Assam (C) Manipur (D) Meghalaya **Answer: B**
Q643. Madhubani (or Mithila) painting, recognized for its two-dimensional geometric patterns and natural dye pigments, originated in which Indian state? (A) Bihar (B) Odisha (C) Rajasthan (D) Madhya Pradesh **Answer: A**
Q644. The renowned Hornbill Festival, organized annually in December to showcase the heritage and dances of indigenous tribes, takes place in which state? (A) Mizoram (B) Arunachal Pradesh (C) Sikkim (D) Nagaland **Answer: D**
Q645. How many major classical dance traditions are officially recognized by India's Sangeet Natak Akademi? (A) 6 (B) 7 (C) 8 (D) 10 **Answer: C**
Q646. Pongal, a four-day thanksgiving harvest festival during which sweet rice boiled in milk is offered to the Sun God, is celebrated in which state? (A) Tamil Nadu (B) Karnataka (C) Telangana (D) Goa **Answer: A**
Q647. The classical dance form "Sattriya", practiced for centuries in monasteries (sattras) of Assam, was founded in the 15th century by which revered saint and reformer? (A) Chaitanya Mahaprabhu (B) Mahapurusha Srimanta Sankaradeva (C) Madhavadeva (D) Kabir Das **Answer: B**
Q648. Warli tribal painting, distinguished by its white pigment circles, triangles, and stick figures painted on earthen walls, is native to which state? (A) Himachal Pradesh (B) Jharkhand (C) Maharashtra (D) Kerala **Answer: C**
Q649. The celebrated "Trinity of Carnatic Music" who revolutionized South Indian classical compositions consists of Tyagaraja, Muthuswami Dikshitar, and who among the following? (A) Syama Sastri (B) Purandara Dasa (C) Swathi Thirunal (D) Annamacharya **Answer: A**
Q650. Losar, characterized by cham masked dances, prayers, and community feasting, marks the traditional New Year festival in which region? (A) Rann of Kutch (B) Konkan Coast (C) Thar Desert (D) Ladakh and Himalayan Buddhist regions **Answer: D**
Q651. Which gas, making up approximately 21% of Earth's atmosphere, is essential for aerobic respiration in animals and for combustion? (A) Oxygen (B) Nitrogen (C) Carbon dioxide (D) Hydrogen **Answer: A**
Q652. Why does the clear sky appear blue during a sunny daytime? (A) Due to reflection of light by ocean water (B) Due to total internal reflection in dust clouds (C) Due to Rayleigh scattering of shorter blue wavelengths by atmospheric molecules (D) Due to absorption of blue light by the ozone layer **Answer: C**
Q653. Which electrical machine operates on the principle of electromagnetic induction to convert mechanical energy into electrical energy? (A) Electric Motor (B) Electric Generator (Dynamo) (C) Transformer (D) Galvanometer **Answer: B**
Q654. What is the chemical name and formula of ordinary table salt consumed daily in food? (A) S o d i u m B i c a r b o n a t e (N a H C O) (B) Sodium Hydroxide (NaOH) (C) Potassium Chloride (KCl) (D) Sodium Chloride (NaCl) **Answer: D**
Q655. Which metallic chemical element is uniquely liquid at standard room temperature and pressure (25 °C)? (A) Mercury (B) Bromine (C) Gallium (D) Lead **Answer: A**
Q656. Which organic acid is naturally present in high concentrations in citrus fruits such as lemons, limes, and oranges? (A) Acetic Acid (B) Citric Acid (C) Oxalic Acid (D) Lactic Acid **Answer: B**
Q657. Which essential vitamin is synthesized biochemically in human epidermal skin cells when exposed to solar ultraviolet-B (UVB) radiation? (A) Vitamin A (B) Vitamin C (C) Vitamin D (D) Vitamin K **Answer: C**
Q658. What is the hardest naturally occurring mineral substance known on Earth, ranking 10 on the Mohs scale of mineral hardness? (A) Diamond (B) Corundum (C) Topaz (D) Quartz **Answer: A**
Q659. The spontaneous net movement of solvent (water) molecules through a selectively permeable membrane from a region of lower solute concentration to higher solute concentration is termed: (A) Diffusion (B) Sedimentation (C) Sublimation (D) Osmosis **Answer: D**
Q660. What is the speed of sound waves traveling through a complete physical vacuum? (A) 343 metres per second (B) Zero (sound cannot propagate through a vacuum) (C) 300,000 kilometres per second (D) 1,500 metres per second **Answer: B**
Q661. Which is the closest planet to the Sun in our solar system, completing one orbit in just 88 Earth days? (A) Venus (B) Mars (C) Mercury (D) Earth **Answer: C**
Q662. Which terrestrial planet is commonly called the "Red Planet" due to the prevalence of iron oxide (rust) across its surface dust? (A) Jupiter (B) Mars (C) Saturn (D) Mercury **Answer: B**
Q663. Which is the largest moon of Saturn and the only known moon in the solar system to possess a substantial, dense nitrogen-rich atmosphere with liquid hydrocarbon lakes? (A) Titan (B) Europa (C) Ganymede (D) Phobos **Answer: A**
Q664. India's primary satellite launching facility, the Satish Dhawan Space Centre (SDSC SHAR), is located on which barrier island in Andhra Pradesh? (A) Wheeler Island (B) Rameswaram (C) Diu Island (D) Sriharikota **Answer: D**
Q665. What was the name of the lunar lander of ISRO's Chandrayaan-3 mission that successfully made a historic soft landing near the Moon's south polar region on 23 August 2023? (A) Pragyan (B) Vikram (C) Pushpak (D) Aryabhata **Answer: B**
Q666. What is the name of the barred spiral galaxy that contains our Solar System, visible as a milky band of light in the night sky? (A) Milky Way (Akash Ganga) (B) Andromeda Galaxy (C) Triangulum Galaxy (D) Whirlpool Galaxy **Answer: A**
Q667. Which was the world's first artificial satellite, launched into low Earth orbit on 4 October 1957, initiating the Space Age? (A) Explorer 1 (B) Vostok 1 (C) Sputnik 1 (D) Telstar 1 **Answer: C**

Q668. India's first dedicated space-based observatory to study the Sun, Aditya-L1, is positioned in a halo orbit around which specific point in space? (A) Lagrange Point 1 (L1), about 1.5 million km from Earth (B) Lagrange Point 2 (L2), behind the Earth (C) Low Earth Polar Orbit at 600 km (D) Geostationary Transfer Orbit at 36,000 km **Answer: A**
Q669. What is the internationally accepted boundary line, located at an altitude of 100 kilometers (62 miles) above mean sea level, that defines the edge of space? (A) Armstrong Limit (B) Van Allen Belt (C) Tropopause (D) Karman Line **Answer: D**
Q670. Halley's Comet (1P/Halley), the only naked-eye comet that can appear twice in a human lifetime, has an orbital period of approximately: (A) 25 to 26 years (B) 75 to 76 years (C) 120 to 122 years (D) 200 years **Answer: B**
Q671. Kaziranga National Park in Assam is globally celebrated for providing a sanctuary to two-thirds of the world's population of which threatened mammal? (A) Snow Leopard (B) Asiatic Lion (C) Great Indian One-horned Rhinoceros (D) Red Panda **Answer: C**
Q672. Gir National Park and Wildlife Sanctuary in Gujarat is the world's last remaining natural refuge of which endangered big cat? (A) Asiatic Lion (B) Royal Bengal Tiger (C) Indian Leopard (D) Cheetah **Answer: A**
Q673. Which is India's oldest national park, established in 1936 as Hailey National Park and later renamed after a legendary naturalist and conservationist? (A) Ranthambore National Park (B) Jim Corbett National Park (Uttarakhand) (C) Kanha National Park (D) Bandipur National Park **Answer: B**
Q674. The Sundarbans National Park, sheltering the largest contiguous tidal halophytic mangrove forest in the world and Royal Bengal Tigers, is situated in which state? (A) Odisha (B) Andhra Pradesh (C) Tamil Nadu (D) West Bengal **Answer: D**
Q675. Keoladeo National Park (formerly Bharatpur Bird Sanctuary) in Rajasthan is an internationally renowned wetland famous as a wintering habitat for: (A) Emperor Penguins (B) Flamingos from Antarctica (C) Migratory waterbirds and Siberian Cranes (D) Ospreys and Bald Eagles **Answer: C**
Q676. The progressive increase in the concentration of persistent, non-biodegradable toxins (like DDT or mercury) at higher trophic levels in a food chain is known as: (A) Biomagnification (B) Eutrophication (C) Bio-remediation (D) Biodegradation **Answer: A**
Q677. Keibul Lamjao, the world's only floating national park composed of floating decomposed biomass called phumdis, is situated on Loktak Lake in which state? (A) Nagaland (B) Manipur (C) Mizoram (D) Meghalaya **Answer: B**
Q678. Silent Valley National Park, famous for preserving pristine tropical evergreen rainforests and the vulnerable Lion-tailed Macaque, is located in: (A) Western Ghats of Maharashtra (B) Satpura Range of Madhya Pradesh (C) Anamalai Hills of Tamil Nadu (D) Palakkad district of Kerala **Answer: D**
Q679. Which international environmental treaty, agreed upon in 1987, successfully mandated the global phase-out of ozone-depleting substances like chlorofluorocarbons (CFCs)? (A) Kyoto Protocol (B) Paris Agreement (C) Montreal Protocol (D) Basel Convention **Answer: C**
Q680. The renowned Chipko Movement of the 1970s, where rural villagers hugged forest trees to protect them from commercial logging, began in which region? (A) Chamoli district (Uttarakhand) (B) Bastar district (Chhattisgarh) (C) Sundarbans (West Bengal) (D) Silent Valley (Kerala) **Answer: A**
Q681. Which is the largest and deepest ocean on Earth, covering more than 30% of the Earth's total surface area? (A) Atlantic Ocean (B) Pacific Ocean (C) Indian Ocean (D) Arctic Ocean **Answer: B**
Q682. Which river, flowing over 6,650 km northward through northeastern Africa to empty into the Mediterranean Sea, is recognized as the longest river on Earth? (A) Nile River (B) Amazon River (C) Yangtze River (D) Mississippi River **Answer: A**
Q683. What is the name of the deepest surveyed point in the world's oceans, located in the Mariana Trench at a depth of almost 11,000 meters? (A) Java Trench (B) Puerto Rico Trench (C) Challenger Deep (D) Sunda Deep **Answer: C**
Q684. Which narrow strait connects the Arctic Ocean with the Bering Sea and separates the continents of Asia (Russia) and North America (Alaska)? (A) Strait of Gibraltar (B) Strait of Malacca (C) Bosporus Strait (D) Bering Strait **Answer: D**
Q685. Which South American landlocked country, named after the liberator Simón Bolívar, has constitutional capital Sucre and seat of government La Paz? (A) Paraguay (B) Bolivia (C) Uruguay (D) Ecuador **Answer: B**
Q686. Angel Falls, the world's highest uninterrupted waterfall with a drop of 979 meters (3,212 feet), plunges from Auyán-tepui in which country? (A) Venezuela (B) Brazil (C) Colombia (D) Guyana **Answer: A**
Q687. The Great Barrier Reef, the planet's most extensive coral reef system that can even be seen from space, is situated off the coast of which country? (A) South Africa (B) Indonesia (C) Australia (D) Philippines **Answer: C**
Q688. Which desert plateau in South America, wedged between the Andes mountains and the Pacific Ocean, is considered the driest non-polar desert on Earth? (A) Kalahari Desert (B) Gobi Desert (C) Mojave Desert (D) Atacama Desert **Answer: D**
Q689. The Prime Meridian, chosen internationally as the reference line of 0° longitude from which Greenwich Mean Time is calculated, passes through: (A) Paris, France (B) Greenwich, London (United Kingdom) (C) Geneva, Switzerland (D) Rome, Italy **Answer: B**
Q690. What is the narrow strip of land connecting Central America to South America, separating the Caribbean Sea (Atlantic) from the Pacific Ocean? (A) Isthmus of Panama (B) Isthmus of Suez (C) Isthmus of Corinth (D) Isthmus of Kra **Answer: A**
Q691. In which international city is the official headquarters of the United Nations (UN) situated? (A) Washington, D.C. (B) London, (C) Geneva (D) New York City **Answer: D**
Q692. Which premier financial institution serves as the central bank of India, regulating the issuance of banknotes and monetary stability? (A) State Bank of India (SBI) (B) Reserve Bank of India (RBI) (C) Securities and Exchange Board of India (SEBI) (D) NITI Aayog **Answer: B**
Q693. The World Health Organization (WHO), dedicated to international public health and epidemic containment, is headquartered in: (A) Geneva, Switzerland (B) Rome, Italy (C) Vienna, Austria (D) Brussels, Belgium **Answer: A**
Q694. Where is the apex headquarters of the Indian Space Research Organisation (ISRO) located? (A) Hyderabad (B) Thiruvananthapuram (C) Bengaluru (D) Ahmedabad **Answer: C**
Q695. Where is the headquarters of UNESCO (United Nations Educational, Scientific and Cultural Organization) located? (A) London, UK (B) Paris, France (C) Berlin, Germany (D) Madrid, Spain **Answer: B**
Q696. The Secretariat of the South Asian Association for Regional Cooperation (SAARC) is established in which capital city? (A) New Delhi, India (B) Colombo, Sri Lanka (C) Dhaka, Bangladesh (D) Kathmandu, Nepal **Answer: D**
Q697. The International Court of Justice (ICJ), the principal judicial organ of the UN that adjudicates legal disputes between nation-states, convenes at the Peace Palace in: (A) The Hague, Netherlands (B) Geneva, Switzerland (C) Bern, Switzerland (D) Strasbourg, France **Answer: A**
Q698. UNICEF (United Nations International Children's Emergency Fund) is dedicated primarily to promoting the rights and welfare of: (A) Elderly citizens and pensioners (B) Refugee journalists (C) Children and mothers worldwide, especially in developing regions (D) Merchant mariners and sailors **Answer: C**
Q699. The 1944 Bretton Woods Conference in New Hampshire led to the creation of the International Bank for Reconstruction and Development (World Bank) and which sister monetary institution? (A) World Trade Organization (WTO) (B) International Monetary Fund (IMF) (C) Bank for International Settlements (BIS) (D) Asian Development Bank (ADB) **Answer: B**
Q700. The Defence Research and Development Organisation (DRDO), which develops indigenous missiles like Agni and Prithvi, functions under which Union Ministry? (A) Ministry of Home Affairs (B) Ministry of Science and Technology (C) Ministry of Electronics and Information Technology (D) Ministry of Defence **Answer: D**
Q701. Who was the first Indian athlete to win an individual Olympic gold medal in the men's 10-metre air rifle shooting event at the Beijing 2008 Games? (A) Abhinav Bindra (B) Rajyavardhan Singh Rathore (C) Sushil Kumar (D) Neeraj Chopra **Answer: A**
Q702. National Sports Day of India, celebrated annually on 29 August, commemorates the birth anniversary of which legendary hockey wizard? (A) Balbir Singh Sr. (B) Major Dhyan Chand (C) Leslie Claudius (D) K. D. Singh Babu **Answer: B**
Q703. Which of the four major Grand Slam tennis tournaments is traditionally played on red clay courts in Paris? (A) Wimbledon (B) US Open (C) French Open (Roland Garros) (D) Australian Open **Answer: C**
Q704. The scoring terms "Deuce", "Love", and "Advantage" are classically associated with which Olympic racket sport? (A) Table Tennis (B) Squash (C) Cricket (D) Lawn Tennis **Answer: D**
Q705. "The Ashes" is a historic biennial Test cricket series contested exclusively between which two national teams? (A) India and Pakistan (B) Australia and England (C) South Africa and West Indies (D) England and New Zealand **Answer: B**
Q706. Who was the first Indian woman to win an Olympic medal, securing a bronze in weightlifting (69 kg category) at the Sydney 2000 Olympic Games? (A) Karnam Malleswari (B) P. T. Usha (C) Mary Kom (D) Saina Nehwal **Answer: A**
Q707. The Durand Cup, the oldest existing football tournament in Asia and third-oldest globally, was first played in 1888 at: (A) Kolkata (B) Mumbai (C) Shimla (D) New Delhi **Answer: C**
Q708. The Thomas Cup and the Uber Cup are the premier international team championships for men and women respectively in which sport? (A) Volleyball (B) Rowing (C) Table Tennis (D) Badminton **Answer: D**
Q709. The Ancient Olympic Games, held in honor of the god Zeus starting in 776 BCE, took place at which sacred sanctuary in ancient Greece? (A) Athens (B) Olympia (C) Sparta (D) Corinth **Answer: B**
Q710. The title of "Grandmaster" (GM), the highest title a chess player can attain aside from World Champion, is officially bestowed by which governing organization? (A) FIDE (International Chess Federation) (B) ICC (International Chess Council) (C) IOC (International Olympic Committee) (D) WADA **Answer: A**
Q711. Who is traditionally credited with authoring the ancient Sanskrit collection of animal fables and moral statecraft known as the "Panchatantra"? (A) Chanakya (B) Banabhatta (C) Pandit Vishnu Sharma (D) Bhavabhuti **Answer: C**
Q712. Who was the first Indian and first Asian to win the Nobel Prize in Literature in 1913 for his sublime collection of spiritual poems, "Gitanjali"? (A) Rabindranath Tagore (B) Sri Aurobindo (C) Sarojini Naidu (D) R. K. Narayan **Answer: A**
Q713. The celebrated play "Abhijñanasakuntalam" and the lyric poem "Meghaduta" ("The Cloud Messenger") were written by which classical Sanskrit poet and dramatist? (A) Bhasa (B) Mahakavi Kalidasa (C) Dandin (D) Harishena **Answer: B**
Q714. Which prominent world leader authored the inspiring autobiography titled "The Story of My Experiments with Truth", originally penned in Gujarati? (A) Nelson Mandela (B) Subhas Chandra Bose (C) Dr. B. R. Ambedkar (D) Mahatma Gandhi **Answer: D**
Q715. The "Arthashastra", an ancient Indian encyclopedic treatise on statecraft, military strategy, espionage, and taxation, was composed by: (A) Kautilya (Chanakya) (B) Megasthenes (C) Panini (D) Patanjali **Answer: A**
Q716. Who authored the world-famous seven-book fantasy novel series chronicling the adventures of young wizard Harry Potter and Hogwarts School? (A) Roald Dahl (B) Enid Blyton (C) J. K. Rowling (D) C. S. Lewis **Answer: C**
Q717. Which leader wrote the landmark historical text "The Discovery of India", while imprisoned at Ahmednagar Fort during the Quit India Movement (1942–1946)? (A) Sardar Patel (B) Jawaharlal Nehru (C) Maulana Abul Kalam Azad (D) Dr. S. Radhakrishnan **Answer: B**
Q718. The ancient Sanskrit compendium "Charaka Samhita", foundational to classical Indian scholarship, is an authoritative text on: (A) Astronomy and Planetary Calculations (B) Music and Classical Dance (C) Vedic Geometry and Altar Building (D) Ayurveda and Internal Medicine **Answer: D**
Q719. Which esteemed Indian author created the fictional South Indian town of Malgudi in celebrated books like "Swami and Friends" and "Malgudi Days"? (A) R. K. Narayan (B) Mulk Raj Anand (C) Raja Rao (D) Ruskin Bond **Answer: A**
Q720. Who was the inaugural recipient of the prestigious Jnanpith Award in 1965 for his Malayalam poetry collection "Odakkuzhal" ("The Bamboo Flute")? (A) K. V. Puttappa (Kuvempu) (B) Tarasankar Bandyopadhyay (C) G. Sankara Kurup (D) Firaq Gorakhpuri **Answer: C**
Q721. Who was awarded the first US patent for the commercial electric telephone in March 1876? (A) Thomas Edison (B) Alexander Graham Bell (C) Guglielmo Marconi (D) Samuel Morse **Answer: B**
Q722. Which Scottish bacteriologist discovered penicillin, the world's first widely effective natural antibiotic, in 1928 at St Mary's Hospital, London? (A) Louis Pasteur (B) Robert Koch (C) Sir Alexander Fleming (D) Joseph Lister **Answer: C**

Q723. Sir C. V. Raman was awarded the Nobel Prize in Physics in 1930 for which groundbreaking discovery in the physics of light? (A) The Raman Effect (Inelastic scattering of photons by molecules) (B) Theory of Supercondutivity (C) Photoelectric Effect (D) Discovery of Nuclear Fission **Answer: A**

Q724. Which English mathematician and physicist formulated the Three Laws of Motion and the Law of Universal Gravitation in his work "Philosophiae Naturalis Principia Mathematica"? (A) Galileo Galilei (B) Albert Einstein (C) Johannes Kepler (D) Sir Isaac Newton **Answer: D**

Q725. Who pioneered the world's first successful vaccine in 1796 by using cowpox material to create immunity against the deadly smallpox virus? (A) Jonas Salk (B) Edward Jenner (C) Albert Sabin (D) Paul Ehrlich **Answer: B**

Q726. Who introduced mechanical movable type printing to Europe around 1440, revolutionizing book production and information dissemination? (A) Johannes Gutenberg (B) William Caxton (C) Leonardo da Vinci (D) Blaise Pascal **Answer: A**

Q727. Which Indian polymath pioneered the investigation of radio and microwave optics and invented the crescograph to measure microscopic plant growth? (A) Meghnad Saha (B) Satyendra Nath Bose (C) Sir Jagadish Chandra Bose (D) Homi J. Bhabha **Answer: C**

Q728. In 1953, the double-helix structure of DNA was resolved by James Watson and Francis Crick, utilizing critical X-ray diffraction data gathered by which scientist? (A) Barbara McClintock (B) Dorothy Hodgkin (C) Marie Curie (D) Rosalind Franklin **Answer: D**

Q729. Which British physicist proved the existence of the neutron (the neutral subatomic particle inside the atomic nucleus) in 1932, earning the Nobel Prize in Physics? (A) James Chadwick (B) Ernest Rutherford (C) J. J. Thomson (D) Niels Bohr **Answer: A**

Q730. Which self-taught Indian mathematical prodigy from Kumbakonam made extraordinary contributions to number theory, infinite series, and continued fractions in collaboration with G. H. Hardy? (A) Aryabhata (B) Srinivasa Ramanujan (C) Brahmagupta (D) Prasanta Chandra Mahalanobis **Answer: B**

Q731. Who is revered as the "Iron Man of India" and "Bismarck of India" for successfully integrating more than 560 princely states into the Indian Union? (A) Subhas Chandra Bose (B) B. R. Ambedkar (C) Bhagat Singh (D) Sardar Vallabhbhai Patel **Answer: D**

Q732. Who was the first President of independent India, holding office for twelve consecutive years from 1950 to 1962? (A) Dr. Rajendra Prasad (B) Dr. S. Radhakrishnan (C) Dr. Zakir Husain (D) V. V. Giri **Answer: A**

Q733. Which visionary 19th-century social reformer founded the Brahmo Samaj and campaigned tirelessly to outlaw the practice of Sati in 1829? (A) Ishwar Chandra Vidyasagar (B) Raja Ram Mohan Roy (C) Swami Dayananda Saraswati (D) Keshab Chandra Sen **Answer: B**

Q734. Which freedom fighter and lyrical poet was known as the "Nightingale of India" (Bharat Kokila) and became the first woman Governor of an Indian state (United Provinces)? (A) Sucheta Kripalani (B) Vijaya Lakshmi Pandit (C) Sarojini Naidu (D) Aruna Asaf Ali **Answer: C**

Q735. Which social reformer, regarded as the first female teacher of India, established the first indigenous school for girls in Pune in 1848, alongside her husband Jyotirao Phule? (A) Savitribai Phule (B) Tarabai Shinde (C) Pandita Ramabai (D) Kadambini Ganguly **Answer: A**

Q736. Who delivered the historic speech beginning with "Sisters and brothers of America!" at the Parliament of the World's Religions in Chicago (A) Swami Vivekananda (B) Ramakrishna Paramahamsa (C) Paramahansa Yogananda (D) Rabindranath Tagore **Answer: B**

Q737. Who was the first woman of Indian origin in space, flying on Space Shuttle Columbia missions STS-87 (1997) and STS-107 (2003)? (A) Sunita Williams (B) Sirisha Bandla (C) Ritu Karidhal (D) Dr. Kalpana Chawla **Answer: D**

Q738. Which influential Chief Minister of Madras State (Tamil Nadu) introduced the pioneering free Mid-Day Meal Scheme in schools in the 1950s to encourage classroom attendance? (A) C. Rajagopalachari (B) C. N. Annadurai (C) K. Kamaraj (D) M. G. Ramachandran **Answer: C**

Q739. Which charismatic freedom fighter organized the Indian National Army (Azad Hind Fauj) and proclaimed the famous declaration: "Give me blood, and I shall give you freedom!"? (A) Netaji Subhas Chandra Bose (B) Chandrashekhar Azad (C) Bhagat Singh (D) Rash Behari Bose **Answer: A**

Q740. Who is celebrated as the "Father of the Indian Nuclear Programme" having founded the Tata Institute of Fundamental Research (TIFR) and the Atomic Energy Commission of India? (A) Dr. A. P. J. Abdul Kalam (B) Dr. Homi Jehangir Bhabha (C) Dr. Raja Ramanna (D) Dr. Shanti Swaroop Bhatnagar **Answer: B**

Q741. What is the full form of the abbreviation "CPU", widely known as the primary brain of a computer system? (A) Central Processing Unit (B) Central Power Unit (C) Computer Program Unit (D) Control Panel Unit **Answer: A**

Q742. What does the acronym "RAM" stand for, representing the high-speed volatile working memory of a computing device? (A) Random Access Memory (B) Read Access Memory (C) Rapid Action Module (D) Read Auxiliary Memory **Answer: A**

Q743. What does "URL" stand for in digital networking, designating the unique address used to locate a webpage on the World Wide Web? (A) Universal Resource Link (B) Unified Retrieval Language (C) User Reference Locator (D) Uniform Resource Locator **Answer: D**

Q744. Which 19th-century English mathematician and mechanical engineer is widely regarded as the "Father of the Computer" for designing the Analytical Engine? (A) Alan Turing (B) Charles Babbage (C) John von Neumann (D) Blaise Pascal **Answer: B**

Q745. Who is recognized as the world's first computer programmer for writing an algorithm intended to calculate Bernoulli numbers on Babbage's Analytical Engine? (A) Grace Hopper (B) Katherine Johnson (C) Ada Lovelace (D) Margaret Hamilton **Answer: C**

Q746. The commercial wireless networking standard "Wi-Fi" is based on which family of IEEE telecommunication standards? (A) IEEE 802.11 (B) IEEE 802.3 (C) IEEE 802.15 (D) IEEE 802.16 **Answer: A**

Q747. In standard Windows and Linux personal computers, which key combination is used to copy highlighted text or files to the system clipboard? (A) Ctrl + V (B) Ctrl + C (C) Ctrl + X (D) Ctrl + Z **Answer: B**

Q748. What is the primary role of an Operating System (such as Windows, macOS, Android, or Linux) in a computer? (A) To generate electricity for the system (B) To clean physical dust from disk drives (C) To prevent users from typing in lowercase (D) To manage hardware resources and provide a platform for application software **Answer: D**

Q749. In standard computer binary storage measurements, how many Megabytes (MB) make up exactly one Gigabyte (GB)? (A) 1,024 MB (B) 1,000 MB (C) 512 MB (D) 2,048 MB **Answer: A**

Q750. Which network topology connects each device to exactly two other neighboring devices, forming a single continuous closed circular pathway for data packets? (A) Star Topology (B) Bus Topology (C) Ring Topology (D) Mesh Topology **Answer: C**

Q751. What is the official currency of the Republic of India, subdivided into 100 paise? (A) Indian Rupee (INR) (B) Indian Taka (C) Indian Dinar (D) Indian Dollar **Answer: A**

Q752. The official Indian Rupee sign (₹), combining the Devanagari letter "Ra" and Latin capital "R" with a horizontal cross-bar, was designed by: (A) Nandan Nilekani (B) Satyajit Ray (C) D. Udaya Kumar (D) C. Rangarajan **Answer: C**

Q753. In banking services, what does the widely used abbreviation "ATM" stand for? (A) Any Time Money (B) Automated Teller Machine (C) Automatic Transfer Mechanism (D) Authorized Transaction Module **Answer: B**

Q754. Unlike other Indian currency notes that bear the signature of the Governor of the RBI, the One Rupee note bears the signature of: (A) Prime Minister of India (B) Governor of the RBI (C) Chief Justice of India (D) Finance Secretary, Ministry of Finance **Answer: D**

Q755. What is the full form of "PIN", the confidential 4- or 6-digit passcode used to verify identity for debit cards and digital payments? (A) Personal Identification Number (B) Public Internet Network (C) Payment Identification Node (D) Personal Information Name **Answer: A**

Q756. Which real-time payment system developed by the National Payments Corporation of India (NPCI) enables instant inter-bank money transfers via mobile devices? (A) SWIFT (B) UPI (Unified Payments Interface) (C) RTGS (D) NEFT **Answer: B**

Q757. On which date was the Goods and Services Tax (GST), India's unified multi-stage indirect tax, officially launched under the slogan "One Nation, One Tax"? (A) 8th November 2016 (B) 1st April 2017 (C) 1st July 2017 (D) 15th August 2018 **Answer: C**

Q758. Which statutory regulatory body, established in 1992 under an Act of Parliament, protects the interests of investors in securities and regulates Indian stock exchanges? (A) Securities and Exchange Board of India (SEBI) (B) Insurance Regulatory and Development Authority (IRDAI) (C) Competition Commission of India (CCI) (D) Enforcement Directorate (ED) **Answer: A**

Q759. What does the economic term "Inflation" signify in the context of an economy? (A) A rapid drop in the total population (B) An increase in gold reserves held by commercial banks (C) A decrease in domestic manufacturing (D) A sustained general increase in the prices of goods and services over time **Answer: D**

Q760. NABARD was established in July 1982 by the Government of India as an apex development financial institution specifically dedicated to: (A) Urban industrial steel plants (B) Agriculture and Rural Development (C) International airline transport (D) Mining and mineral export **Answer: B**

Q761. Crops that are sown with the onset of the southwest monsoon (June–July) and harvested in autumn (September–October) are classified as: (A) Rabi crops (B) Zaid crops (C) Kharif crops (D) Cash crops **Answer: C**

Q762. Crops sown during the winter season (October–December) and harvested in spring (March–April), such as wheat, barley, and mustard, are called: (A) Rabi crops (B) Kharif crops (C) Zaid crops (D) Plantation crops **Answer: A**

Q763. Which major cereal grain, requiring temperatures above 25°C, high humidity, and annual rainfall above 100 cm, is the primary staple food for a majority of people in India? (A) Barley (B) Maize (C) Millet (D) Rice (Paddy) **Answer: D**

Q764. Which renowned Indian agricultural geneticist is acclaimed as the "Father of the Green Revolution in India" for developing semi-dwarf, high-yielding crop varieties? (A) Dr. Verghese Kurien (B) Dr. M. S. Swaminathan (C) Dr. Norman Borlaug (D) Dr. Birbal Sahni **Answer: B**

Q765. Which fertile soil type, formed by the weathering of Deccan basalt lava rocks, is also known as "Regur soil" and is exceptionally suited for growing cotton? (A) Black Soil (B) Alluvial Soil (C) Laterite Soil (D) Arid Soil **Answer: A**

Q766. "Operation Flood", launched in 1970 under the leadership of Dr. Verghese Kurien to empower rural dairy farmers and end milk deficits, is popularly known as: (A) The Green Revolution (B) The Blue Revolution (C) The White Revolution (D) The Yellow Revolution **Answer: C**

Q767. The traditional agricultural method prevalent in the hilly states of Northeast India where forest patches are cleared, burned, and cultivated before being left fallow is known as: (A) Terrace farming (B) Intensive subsistence agriculture (C) Hydroponics (D) Jhum cultivation (Slash-and-burn shifting cultivation) **Answer: D**

Q768. Saffron (Kesar), derived from the stigmas of Crocus sativus and awarded a Geographical Indication (GI) tag, is cultivated almost exclusively in the elevated karewas of: (A) Himachal Pradesh (Kullu) (B) Jammu and Kashmir (Pampore highlands) (C) Uttarakhand (Garhwal) (D) Sikkim (Gangtok) **Answer: B**

Q769. Which natural plant fibre, derived from the stem of Corchorus plants and grown in abundance in the alluvial soil of the Ganga-Brahmaputra delta, is called the "Golden Fibre"? (A) Jute (B) Cotton (C) Hemp (D) Silk **Answer: A**

Q770. Which northeastern Indian state made history in January 2016 by becoming the world's first state to implement 100% certified organic agriculture across all its farmland? (A) Meghalaya (B) Kerala (C) Sikkim (D) Tripura **Answer: C**

Q771. What is the primary ecological purpose of installing rooftop rainwater harvesting systems in residential and school buildings? (A) To increase river erosion downstream (B) To recharge subterranean groundwater aquifers and reduce municipal water stress (C) To melt polar glaciers (D) To heat domestic rooms in winter **Answer: B**

Q772. Which gas, released copiously by the burning of fossil fuels (coal, oil, and gas) and deforestation, is the leading driver of human-induced greenhouse effect and climate change? (A) Carbon Dioxide (CO_2) (B) Helium (He) (C) Argon (Ar) (D) Oxygen (O_2) **Answer: A**

Q773. Among the following sources of energy, which one is a exhaustible, non-renewable fossil fuel formed from buried plant remains over millions of years? (A) Solar energy (B) Wind energy (C) Coal (D) Geothermal energy **Answer: C**

Q774. Which international organization publishes the official "Red List of Threatened Species", documenting the conservation status and extinction risk of plant and animal species? (A) World Trade Organization (WTO) (B) International Red Cross (C) World Meteorological Organization (WMO) (D) International Union for Conservation of Nature (IUCN) **Answer: D**

Q775. The process of composting organic waste into nutrient-dense humus using specialized earthworms (such as red wigglers, Eisenia fetida) is termed: (A) Incineration (B) Vermicomposting (C) Pyrolysis (D) Fractional Distillation **Answer: B**

Q776. What are the specialized aerial roots developed by mangrove plants that grow vertically upward above waterlogged, oxygen-deficient saline soil to absorb atmospheric oxygen? (A) Pneumatophores (Breathing roots) (B) Tap roots (C) Fibrous roots (D) Haustorial roots **Answer: A**

Q777. What do the "3 R's" of sustainable environmental waste management stand for? (A) Recreate, Rebuild, Relocate (B) Refill, Replace, Return (C) Reduce, Reuse, Recycle (D) Recover, Remove, Resell **Answer: C**

Q778. The rapid ecological deterioration of a lake caused by excessive nutrient enrichment (phosphates and nitrates from fertilizers), triggering algal blooms and hypoxia, is called: (A) Salinization (B) Desertification (C) Acidification (D) Eutrophication **Answer: D**

Q779. The Western Ghats and the Eastern Himalayas in India are classified as global "Biodiversity Hotspots" because they exhibit: (A) Abundant mineral ores and active volcanoes (B) Exceptional levels of endemic species under severe threat of habitat loss (C) Continuous snow cover throughout the year (D) Absence of wild predatory animals **Answer: B**
Q780. During "Earth Hour," organized worldwide by the World Wide Fund for Nature (WWF), individuals and cities turn off non-essential electric lights for one hour to demonstrate commitment to: (A) Planet Earth and combating climate change (B) Saving money on electric utility bills (C) Preparing for solar eclipses (D) Testing backup electric power generators **Answer: A**
Q781. On which date is World Environment Day commemorated globally every year under the United Nations Environment Programme (UNEP)? (A) 22nd April (B) 1st May (C) 5th June (D) 16th September **Answer: C**
Q782. International Day of Yoga, adopted unanimously by the UN General Assembly following India's proposal, is celebrated annually across the world on: (A) 1st May (B) 21st June (C) 15th August (D) 2nd October **Answer: B**
Q783. National Science Day is celebrated in India on 28 February each year to commemorate which milestone in Indian scientific history? (A) The discovery of the Raman Effect by Sir C. V. Raman in 1928 (B) The launch of India's first satellite Aryabhata (C) The birthday of Dr. A. P. J. Abdul Kalam (D) The establishment of ISRO **Answer: A**
Q784. Teachers' Day is celebrated across India on 5 September in honor of the birth anniversary of which distinguished philosopher and former President of India? (A) Dr. Zakir Husain (B) Dr. Rajendra Prasad (C) Dr. A. P. J. Abdul Kalam (D) Dr. Sarvepalli Radhakrishnan **Answer: D**
Q785. On which date is World Water Day observed internationally each year to highlight the vital importance of freshwater and advocate for sustainable water management? (A) 2nd February (B) 22nd March (C) 7th April (D) 11th July **Answer: B**
Q786. Earth Day, first organized in 1970 to support environmental protection, clean air, and planetary conservation, is commemorated worldwide on: (A) 8th March (B) 21st March (C) 22nd April (D) 5th June **Answer: C**
Q787. National Youth Day (Yuva Diwas) is celebrated in India on 12 January to honor the birth anniversary and ideals of: (A) Swami Vivekananda (B) Bhagat Singh (C) Subhas Chandra Bose (D) Chhatrapati Shivaji Maharaj **Answer: A**
Q788. Constitution Day (Samvidhan Divas) is observed across India on 26 November to celebrate which landmark event? (A) The day the Constitution came into effect (B) The birthday of Dr. B. R. Ambedkar (C) The first meeting of the Constituent Assembly (D) The formal adoption of the Constitution by the Constituent Assembly in 1949 **Answer: D**
Q789. International Day for the Preservation of the Ozone Layer (World Ozone Day) is marked globally on 16 September to commemorate: (A) The discovery of the ozone hole over Antarctica (B) The signing of the landmark Montreal Protocol in 1987 (C) The invention of eco-friendly refrigerators (D) The Paris Climate Agreement **Answer: B**
Q790. In India, Good Governance Day is celebrated on 25 December to honor the birth anniversary of which former Prime Minister and Bharat Ratna awardee? (A) Lal Bahadur Shastri (B) P. V. Narasimha Rao (C) Atal Bihari Vajpayee (D) Morarji Desai **Answer: C**
Q791. What is the standard normal core body temperature of a healthy human being on the Celsius scale? (A) 37°C (B) 35°C (C) 39°C (D) 40°C **Answer: A**
Q792. Which flammable hydrocarbon gas forms the primary constituent (50% to 70%) of biogas and compressed natural gas (CNG)? (A) Propane (B) Butane (C) M e t h a n e (C H „) (D) Acetylene **Answer: C**
Q793. What is the pale-yellow liquid component of human blood, making up about 55% of total blood volume and holding cells in suspension? (A) Hemoglobin (B) Plasma (C) Platelets (D) Lymphocytes **Answer: B**
Q794. Which scientific instrument, originally invented by Evangelista Torricelli in 1643, is used to measure atmospheric pressure? (A) Thermometer (B) Anemometer (C) Hygrometer (D) Barometer **Answer: D**
Q795. A straight pencil partially immersed in a glass tumbler of water appears bent or broken at the water-air interface because of: (A) Refraction of light (bending of light rays as they pass into a different optical medium) (B) Internal reflection of light (C) Diffraction around the edge of the pencil (D) Polarization of light rays **Answer: A**
Q796. The deficiency disease Scurvy, characterized by bleeding gums, skin spots, and slow wound healing, is caused by a severe dietary lack of: (A) Vitamin A (B) V i t a m i n B (C) Vitamin C (Ascorbic acid) (D) Vitamin D **Answer: C**
Q797. Which is the largest internal gland in the human body that synthesizes bile juice to facilitate the emulsification and digestion of fats? (A) Pancreas (B) Liver (C) Stomach (D) Kidney **Answer: B**
Q798. The Richter magnitude scale is a base-10 logarithmic scale used worldwide by seismologists to measure the energy released by: (A) Earthquakes (B) Tornadoes and wind speeds (C) Oceanic tides (D) Volcanic ash eruptions **Answer: A**
Q799. The thermodynamic phase transition in which a gas transforms directly into a solid without passing through an intermediate liquid phase (such as frost forming on cold windows) is called: (A) Condensation (B) Evaporation (C) Melting (D) Deposition (or Desublimation) **Answer: D**
Q800. In the International System of Units (SI), what is the standard derived unit of electrical resistance, named after a German physicist? (A) Volt (B) O h m (Ω) (C) Ampere (D) Watt SECTION: MENTAL ABILITY (200 Questions) **Answer: B**
Q801. Find the next number in the given series: 2, 5, 8, 11, 14, ? (A) 15 (B) 16 (C) 17 (D) 18 **Answer: C**
Q802. What is the next number in the sequence: 3, 6, 12, 24, 48, ? (A) 72 (B) 84 (C) 96 (D) 108 **Answer: C**
Q803. Identify the missing term in the sequence of perfect squares: 1, 4, 9, 16, 25, 36, ? (A) 42 (B) 47 (C) 49 (D) 64 **Answer: C**
Q804. Find the missing number in the sequence: 2, 3, 5, 8, 12, 17, ? (A) 21 (B) 22 (C) 23 (D) 24 **Answer: C**
Q805. Which number completes the given pattern? 4, 9, 19, 39, 79, ? (A) 149 (B) 158 (C) 159 (D) 169 **Answer: C**
Q806. Determine the next term in the descending sequence: 100, 96, 88, 76, 60, ? (A) 36 (B) 40 (C) 44 (D) 48 **Answer: B**
Q807. Find the next term in the series: 1, 8, 27, 64, 125, ? (A) 196 (B) 216 (C) 225 (D) 256 **Answer: B**
Q808. Which number comes next in the sequence: 2, 6, 12, 20, 30, 42, ? (A) 52 (B) 54 (C) 56 (D) 60 **Answer: C**
Q809. Find the missing number in the following series: 2, 5, 11, 23, 47, 95, ? (A) 189 (B) 190 (C) 191 (D) 193 **Answer: C**
Q810. Identify the next number in the rapid progression: 1, 2, 6, 24, 120, ? (A) 600 (B) 680 (C) 720 (D) 840 **Answer: C**
Q811. What is the next letter in the given alphabetical series? A, C, E, G, I, ? (A) J (B) K (C) L (D) M **Answer: B**
Q812. Find the next letter in the reverse alphabetical series: Z, X, V, T, R, ? (A) O (B) P (C) Q (D) S **Answer: B**
Q813. Identify the next letter in the sequence: B, E, H, K, N, ? (A) O (B) P (C) Q (D) R **Answer: C**
Q814. Which letter pair completes the given series? AB, CD, EF, GH, ? (A) HI (B) IJ (C) JK (D) IK **Answer: B**
Q815. Find the missing letter in the reverse sequence: Z, W, S, N, ? (A) G (B) H (C) I (D) J **Answer: B**
Q816. Which letter pair follows in the pattern? AZ, BY, CX, DW, ? (A) EU (B) EV (C) FU (D) FV **Answer: B**
Q817. Identify the next letter in the series: B, D, G, K, P, ? (A) T (B) U (C) V (D) W **Answer: C**
Q818. Which three-letter cluster continues the sequence? ACE, BDF, CEG, DFH, ? (A) EFH (B) EGJ (C) EGI (D) FGI **Answer: C**
Q819. Find the missing alphanumeric term: Z1A, X2B, V4C, T8D, ? (A) R16E (B) S16E (C) R12E (D) Q16E **Answer: A**
Q820. Find the letter that continues the sequence: C, F, J, O, U, ? (A) A (B) B (C) C (D) Z **Answer: B**
Q821. Complete the analogy: Book : Author :: Painting : ? (A) Museum (B) Canvas (C) Painter (D) Brush **Answer: C**
Q822. Complete the analogy: Thermometer : Temperature :: Barometer : ? (A) Humidity (B) Atmospheric Pressure (C) Wind Speed (D) Rainfall **Answer: B**
Q823. Complete the analogy: Dog : Puppy :: Cat : ? (A) Calf (B) Foal (C) Kitten (D) Cub **Answer: C**
Q824. Select the missing number to satisfy the relationship: 5 : 25 :: 8 : ? (A) 40 (B) 56 (C) 64 (D) 72 **Answer: C**
Q825. Complete the analogy: Eye : Sight :: Ear : ? (A) Sound (B) Hearing (C) Balance (D) Speaking **Answer: B**
Q826. Complete the analogy: Ornithology : Birds :: Entomology : ? (A) Plants (B) Fossils (C) Insects (D) Reptiles **Answer: C**
Q827. Find the related number: 12 : 144 :: 15 : ? (A) 215 (B) 220 (C) 225 (D) 230 **Answer: C**
Q828. Complete the analogy: Clock : Time :: Odometer : ? (A) Speed (B) Fuel level (C) Distance (D) Engine temperature **Answer: C**
Q829. Find the missing number in the proportion: 7 : 343 :: 6 : ? (A) 196 (B) 216 (C) 226 (D) 256 **Answer: B**
Q830. Complete the analogy: ARCHITECT : BUILDING :: SCULPTOR : ? (A) MUSEUM (B) CHISEL (C) STATUE (D) MARBLE **Answer: C**
Q831. Which of the following items does not belong in the group? Apple, Mango, Banana, Potato (A) Apple (B) Mango (C) Banana (D) Potato **Answer: D**
Q832. Which of the following numbers does not belong to the set? 4, 9, 16, 23, 25 (A) 9 (B) 16 (C) 23 (D) 25 **Answer: C**
Q833. Identify the shape that does not belong with the others: Circle, Triangle, Sphere, Rectangle (A) Circle (B) Triangle (C) Sphere (D) Rectangle **Answer: C**

Q834. Which unit does not belong to the same category as the others? Meter, Kilometer, Kilogram, Centimeter (A) Meter (B) Kilometer (C) Kilogram (D) Centimeter **Answer: C**
Q835. Choose the number that does not belong with the rest of the group: 11, 13, 17, 19, 21, 23 (A) 13 (B) 17 (C) 19 (D) 21 **Answer: D**
Q836. Identify the material that does not belong to the group: Copper, Iron, Silver, Wood (A) Copper (B) Iron (C) Silver (D) Wood **Answer; D**
Q837. Which of the following letter groups does not belong to the class? BCD, FGH, LMN, PRT (A) BCD (B) FGH (C) LMN (D) PRT **Answer: D**
Q838. Find the number pair that does not share the common relationship: (2, 8), (3, 27), (4, 64), (5, 100) (A) (2, 8) (B) (3, 27) (C) (4, 64) (D) (5, 100) **Answer: D**
Q839. Which of the following fractions is the odd one out? 2/4, 3/6, 5/10, 4/12 (A) 2/4 (B) 3/6 (C) 5/10 (D) 4/12 **Answer: D**
Q840. Which number pair does not follow the common rule? (14, 28), (18, 36), (22, 44), (25, 60) (A) (14, 28) (B) (18, 36) (C) (22, 44) (D) (25, 60) **Answer: D**
Q841. Find the odd one out among the celestial bodies: Mercury, Venus, Moon, Mars (A) Mercury (B) Venus (C) Moon (D) Mars **Answer: C**
Q842. Identify the odd one out: Asia, Africa, Paris, Europe (A) Asia (B) Africa (C) Paris (D) Europe **Answer: C**
Q843. Find the odd one out from the following musical instruments: Guitar, Violin, Sitar, Flute (A) Guitar (B) Violin (C) Sitar (D) Flute **Answer: D**
Q844. Find the odd one out among the numbers: 27, 64, 125, 144 (A) 27 (B) 64 (C) 125 (D) 144 **Answer: D**
Q845. Identify the odd one out among classroom items: Pen, Pencil, Eraser, Notebook (A) Pen (B) Pencil (C) Eraser (D) Notebook **Answer: D**
Q846. Select the odd one out from the following measurement units: Kilometer, Centimeter, Yard, Litre (A) Kilometer (B) Centimeter (C) Yard (D) Litre **Answer; D**
Q847. Find the odd one out among the following animals: Sparrow, Crow, Pigeon, Bat (A) Sparrow (B) Crow (C) Pigeon (D) Bat **Answer: D**
Q848. Choose the odd one out from the numbers: 35, 49, 63, 75 (A) 35 (B) 49 (C) 63 (D) 75 **Answer: D**
Q849. Find the odd one out among the letter triplets: PRT, CEG, UWY, KMQ (A) PRT (B) CEG (C) UWY (D) KMQ **Answer: D**
Q850. Identify the odd number pair: (12, 144), (13, 169), (14, 196), (15, 235) (A) (12, 144) (B) (13, 169) (C) (14, 196) (D) (15, 235) **Answer: D**
Q851. If CAT is coded as DBU in a secret code, how will DOG be coded in the same system? (A) EPH (B) FQI (C) COF (D) ENC **Answer: A**
Q852. If BOOK is coded as 2-15-15-11 according to the English alphabet positions, what is the numerical code for PEN? (A) 15-5-14 (B) 16-5-14 (C) 16-6-15 (D) 17-5-14 **Answer: B**
Q853. In a certain code language, if APPLE is coded as ELPPA, how is ORANGE written in that code? (A) EGNARO (B) ENGARO (C) EGNAOR (D) OGNARA **Answer: A**
Q854. If TRAIN is coded as WUDLQ, how will BUS be coded in the same language? (A) CVT (B) EVX (C) EXV (D) DWU **Answer: C**
Q855. If the value of SUN is 54 (since S=19, U=21, N=14 and 19+21+14=54), what is the numerical value of MOON? (A) 53 (B) 55 (C) 57 (D) 59 **Answer: C**
Q856. In a code language, LIGHT is written as MJHIU. How is FLAME coded in that language? (A) GMBNF (B) GMANF (C) GLBNF (D) HMCNE **Answer: A**
Q857. In a certain code, ROAD is coded as URDG. What is the code for SWAN? (A) VZDQ (B) UYDP (C) VZCQ (D) YZDQ **Answer: A**
Q858. If "white" is called "black", "black" is called "red", "red" is called "green", and "green" is called "blue", what is the color of fresh grass? (A) Red (B) Green (C) Blue (D) Black **Answer: C**
Q859. If CLOCK is written as KCOLC and WATCH is written as HCTAW, how is MINUTE written? (A) ETUNIM (B) ETUMIM (C) ETUNIN (D) EUTNIM **Answer: A**
Q860. In a code language, if TEACHER is written as VGCEJGT, how is STUDENT written in that code? (A) UVWFGPV (B) TVWFGPV (C) UVXFGPV (D) UVWFGPU **Answer: A**
Q861. Pointing to a photograph, a boy says, "He is the father of my brother." Who is the person in the photograph to the boy? (A) Uncle (B) Brother (C) Father (D) Grandfather **Answer: C**
Q862. A is the mother of B. B is the sister of C. How is A related to C? (A) Aunt (B) Mother (C) Sister (D) Grandmother **Answer: B**
Q863. Rahul says, "Priya is my father's only daughter." How is Priya related to Rahul? (A) Cousin (B) Mother (C) Sister (D) Aunt **Answer: C**
Q864. Pointing to a young boy, a woman said, "His mother is the only daughter of my mother." How is the woman related to the young boy? (A) Aunt (B) Sister (C) Mother (D) Grandmother **Answer: C**
Q865. A is the brother of B. C is the father of A. D is the sister of C. How is D related to B? (A) Mother (B) Niece (C) Paternal Aunt (D) Sister **Answer: C**
Q866. Ankit introduces a girl saying, "She is the daughter of the only son of my grandfather." Who is the girl to Ankit? (A) Cousin (B) Aunt (C) Sister (D) Mother **Answer: C**
Q867. If X is the son of Y's brother, how is X related to Y? (A) Son (B) Cousin (C) Nephew (D) Uncle **Answer: C**
Q868. Introducing a lady, a man says, "Her husband is the only son of my father." How is the lady related to the man? (A) Sister (B) Mother (C) Wife (D) Daughter **Answer; C**
Q869. A and B are brothers. C and D are sisters. A's son is D's brother. How is B related to C? (A) Father (B) Brother (C) Paternal Uncle (D) Grandfather **Answer; C**
Q870. Pointing to a photograph of a girl, Suresh said, "She is the daughter of my mother's only son." How is the girl related to Suresh? (A) Sister (B) Niece (C) Daughter (D) Cousin **Answer: C**
Q871. A boy walks 10 meters North, then turns right and walks 10 meters. In which direction is he facing now? (A) West (B) South (C) East (D) North **Answer: C**
Q872. If you stand in an open field facing the rising Sun in the morning, which cardinal direction is directly behind your back? (A) North (B) South (C) West (D) South-West **Answer: C**
Q873. A girl walks 15 meters South, then turns to her left. Which direction is she now walking towards? (A) West (B) North (C) East (D) North-East **Answer: C**
Q874. Rohan walks 5 km East, turns left and walks 5 km, then turns left again and walks 5 km. In which direction is he now from his starting point? (A) East (B) North (C) West (D) South **Answer: B**
Q875. A person walks 12 meters South, turns right and walks 5 meters West. What is the shortest straight-line distance from the starting point? (A) 11 meters (B) 13 meters (C) 15 meters (D) 17 meters **Answer: B**
Q876. Facing North, Amit turns 90° clockwise, and then turns 180° counter-clockwise. Which direction is he facing now? (A) East (B) West (C) South (D) North-West **Answer: B**
Q877. Priya walks 4 km West, then turns left and walks 3 km South. How far in a straight line is she from her starting point? (A) 4 km (B) 5 km (C) 6 km (D) 7 km **Answer: B**
Q878. In the evening before sunset, two friends Mohit and Sumit are talking standing face to face. If Mohit's shadow falls exactly to his right, in which direction is Mohit facing? (A) South (B) North (C) East (D) West **Answer: B**
Q879. A runner starts from point P, runs 8 km South, turns right and runs 6 km West to reach point Q. What is the shortest distance between P and Q, and in which direction is Q from P? (A) 10 km, South-West (B) 10 km, North-West (C) 14 km, South-West (D) 12 km, South-East **Answer: A**
Q880. Starting from school, Neha cycles 3 km North, then 4 km East, and finally 3 km South. How far and in which direction is she from the school? (A) 4 km West (B) 4 km East (C) 7 km North (D) 10 km East **Answer: B**
Q881. In a row of 25 students, Aman is 10th from the left end. How many students are there to his right? (A) 14 (B) 15 (C) 16 (D) 17 **Answer: B**
Q882. Suresh ranks 7th from the top in a class of 30 students. What is his rank from the bottom? (A) 23rd (B) 24th (C) 25th (D) 26th **Answer: B**
Q883. In a line of children, Rohan is 5th from the left end and 8th from the right end. How many children are in the line? (A) 11 (B) 12 (C) 13 (D) 14 **Answer: B**
Q884. In a class of 45 students, Neha's rank is 16th from the top. What is her rank from the bottom? (A) 29th (B) 30th (C) 31st (D) 32nd **Answer: B**
Q885. In a movie ticket queue, Deepak is 14th from the front and 17th from the back. How many persons are standing in the queue? (A) 29 (B) 30 (C) 31 (D) 32 **Answer: B**
Q886. Five boys A, B, C, D, and E are compared by height. A is taller than B, but shorter than C. D is taller than C, and E is the shortest. Who is the tallest among them? (A) A (B) B (C) C (D) D **Answer: D**
Q887. In a class of 40 students, Priya is ranked 9th from the top and Anuj is ranked 12th from the bottom. How many students are ranked between Priya and Anuj? (A) 18 (B) 19 (C) 20 (D) 21 **Answer: B**
Q888. In an orchard, a mango tree is 7th from either end of a row. How many trees are in that row? (A) 12 (B) 13 (C) 14 (D) 15 **Answer: B**
Q889. In a row of students, Ravi is 11th from the left and Sunita is 15th from the right. When they interchange their positions, Ravi becomes 21st from the left. What is the total number of students in the row? (A) 34 (B) 35 (C) 36 (D) 37 **Answer: B**

Q890. Among five friends P, Q, R, S, and T: P is heavier than Q but lighter than R. S is lighter than P but heavier than Q. T is heavier than R. Who is the second heaviest friend? (A) P (B) R (C) T (D) S **Answer: B**
Q891. In a 2×2 grid, the entries in Row 1 are [3, 6]. If Row 2 contains [4, ?] and follows the same doubling relationship, what is the missing number? (A) 6 (B) 7 (C) 8 (D) 9 **Answer: C**
Q892. A triangle has vertex numbers 2, 3, and 4, with 9 at its center (since 2+3+4=9). A second triangle has vertex numbers 5, 6, and 7. What number belongs at its center? (A) 16 (B) 17 (C) 18 (D) 19 **Answer: C**
Q893. A circle divided into four equal quadrants contains numbers 2, 4, 8, and ? arranged clockwise. What is the missing number? (A) 12 (B) 14 (C) 16 (D) 18 **Answer: C**
Q894. Find the missing number in the 3×3 matrix: Row 1: [4, 5, 20] Row 2: [6, ?, 42] Row 3: [8, 9, ?] (A) 64 (B) 70 (C) 72 (D) 81 **Answer: C**
Q895. Figure 1 has outer numbers 3, 4, 5 and center 12. Figure 2 has outer numbers 5, 6, 7 and center 18. What is the center number of Figure 3 with outer numbers 7, 8, 9? (A) 22 (B) 23 (C) 24 (D) 25 **Answer: C**
Q896. In a numerical table, Row 1 has [2, 4, 8], Row 2 has [3, 9, 27], and Row 3 has [5, 25, ?]. What is the missing entry? (A) 100 (B) 115 (C) 125 (D) 150 **Answer: C**
Q897. A cross figure has Top=5, Bottom=3, Left=4, Right=2 with Center=14. A second cross has Top=6, Bottom=4, Left=7, Right=9. What is its Center value? (A) 28 (B) 29 (C) 30 (D) 32 **Answer: C**
Q898. In a 3×3 puzzle table, Row 1: [2, 3, 13] Row 2: [4, 5, 41] Row 3: [3, 6, ?] What is the missing number? (A) 36 (B) 40 (C) 45 (D) 48 **Answer: C**
Q899. A circular wheel has opposite sector pairs (3, 27), (4, 64), (5, 125), and (6, ?). What number is paired opposite to 6? (A) 196 (B) 216 (C) 225 (D) 256 **Answer: B**
Q900. In a 3×3 number grid, the rows sum to a constant total of 16: Row 1: [7, 4, 5] Row 2: [2, 6, ?] Row 3: [5, 3, ?] What is the missing number? (A) 2 (B) 3 (C) 4 (D) 5 **Answer: C**
Q901. If the sign "+" means "×" and "×" means "+" what is the value of the expression: 5 + 4 × 3? (A) 17 (B) 20 (C) 23 (D) 27 **Answer: C**
Q902. What positive number when multiplied by itself and then added to 5 results in 30? (A) 4 (B) 5 (C) 6 (D) 7 **Answer: B**
Q903. I f a p e n c o s t s ' 1 5 a n d a n o t e b o o k c o s t s ' 2 5 , w h a t i s t h e t o t a l c o s t o f b u y i n g 2 p e n s a n d 1 n o t e b o o k ? (A) ' 4 5 (B) ' 5 0 (C) ' 5 5 (D) ' 6 0 **Answer: C**
Q904. If "+" means "÷", "-" means "×", "×" means "+", and "÷" means "-", find the value of: 20 + 4 - 3 × 2 (A) 14 (B) 15 (C) 17 (D) 22 **Answer: C**
Q905. The sum of two consecutive whole numbers is 47. What is the larger number? (A) 22 (B) 23 (C) 24 (D) 25 **Answer: C**
Q906. A mother is currently 3 times as old as her son. If the sum of their ages is 48 years, how old is the son? (A) 10 years (B) 12 years (C) 14 years (D) 16 years **Answer; B**
Q907. If "+" means "-" "-" means "×" "×" means "÷", and "÷" means "+" then evaluate: 15 - 2 + 10 ÷ 5 (A) 20 (B) 23 (C) 25 (D) 27 **Answer: C**
Q908. A farmer has chickens (2 legs each) and cows (4 legs each). Together, there are 20 heads and 56 legs. How many cows are on the farm? (A) 6 (B) 7 (C) 8 (D) 9 **Answer: C**
Q909. If a number is doubled and then decreased by 7, the result is 33. What was the original number? (A) 18 (B) 19 (C) 20 (D) 21 **Answer: C**
Q910. In a competition, a student earns 4 marks for each correct answer and loses 1 mark for each incorrect answer. If a student attempts all 30 questions and scores 80 marks, how many questions did he answer correctly? (A) 20 (B) 21 (C) 22 (D) 24 **Answer; C**
Q911. Arrange the following in a logical sequence from smallest to largest geographical area: 1. City, 2. State, 3. Street, 4. Country (A) 1, 3, 2, 4 (B) 3, 1, 2, 4 (C) 3, 2, 1, 4 (D) 1, 2, 3, 4 **Answer: B**
Q912. Arrange the life cycle stages of a butterfly in correct chronological order: 1. Pupa, 2. Egg, 3. Adult Butterfly, 4. Caterpillar (Larva) (A) 2, 1, 4, 3 (B) 2, 4, 1, 3 (C) 4, 2, 1, 3 (D) 2, 3, 4, 1 **Answer: B**
Q913. Arrange the following periods of the day in chronological sequence starting from early morning: 1. Afternoon, 2. Dawn, 3. Night, 4. Noon (A) 2, 4, 1, 3 (B) 2, 1, 4, 3 (C) 1, 2, 4, 3 (D) 4, 2, 1, 3 **Answer: A**
Q914. Given: "All roses are flowers" and "Some flowers fade quickly." Which of the following statements is logically guaranteed? (A) All roses fade quickly (B) No roses fade quickly (C) Some flowers are roses (D) All flowers are roses **Answer: C**
Q915. Arrange the steps of making a telephone call in logical sequence: 1. Dial number, 2. Pick up phone, 3. Speak to person, 4. Listen to ringtone (A) 2, 1, 4, 3 (B) 1, 2, 4, 3 (C) 2, 4, 1, 3 (D) 4, 1, 2, 3 **Answer: A**
Q916. Five books are stacked on a table: Math is above Science, English is below Science, History is above Math, and Hindi is between Math and Science. Which book is at the very bottom of the stack? (A) Science (B) Hindi (C) English (D) Math **Answer: C**
Q917. Arrange the steps of constructing a building in logical sequence: 1. Foundation, 2. Roof, 3. Walls, 4. Painting/Plastering (A) 1, 3, 2, 4 (B) 1, 2, 3, 4 (C) 3, 1, 2, 4 (D) 1, 4, 3, 2 **Answer: A**
Q918. If it is true that "Whenever it rains, the outdoor ground gets wet." If we observe that the outdoor ground is completely dry (not wet), what must be logically concluded? (A) It rained heavily (B) It did not rain (C) The Sun is hidden (D) It is snowing **Answer: B**
Q919. Four friends P, Q, R, and S sit around a circular table facing the center. P sits directly opposite R. Q sits to the right of P. Who sits to the left of P? (A) Q (B) R (C) S (D) Cannot be determined **Answer: C**
Q920. Arrange the following events of criminal justice in meaningful chronological order: 1. Crime, 2. Arrest, 3. Court Trial, 4. Judgment, 5. Police Investigation (A) 1, 2, 5, 3, 4 (B) 1, 5, 2, 3, 4 (C) 5, 1, 2, 3, 4 (D) 1, 5, 3, 2, 4 **Answer: B**
Q921. Which geometric relationship best represents the classes: Animals, Dogs, and Pets? (A) Three completely disjoint circles (B) All Dogs are inside Animals; Pets circle intersects Dogs and Animals (C) All Animals are inside Dogs (D) Two circles inside one with no intersection **Answer: B**
Q922. Which diagram represents the relationship among: Fruits, Apples, and Mangoes? (A) Two separate non-overlapping circles (Apples and Mangoes) both entirely inside a larger circle (Fruits) (B) Three intersecting circles (C) Three mutually disjoint circles (D) Apples inside Mangoes inside Fruits **Answer: A**
Q923. Which relationship best illustrates the categories: Boys, Students, and Athletes? (A) One large circle containing two disjoint smaller circles (B) Three mutually intersecting circles overlapping each other (C) Three concentric circles (D) Three separate non-touching circles **Answer: B**
Q924. In a class of 30 students, 18 play Cricket, 15 play Football, and 8 play both games. How many students play Cricket ONLY? (A) 8 (B) 10 (C) 12 (D) 15 **Answer: B**
Q925. Which description matches the Venn diagram for: Earth, Sea, and Sun? (A) Sea is entirely inside Earth, while Sun is a separate circle outside Earth (B) All three are mutually disjoint. (C) All three overlap partially (D) Sun is inside Earth; which is inside Sea **Answer: A**
Q926. In a group of 50 people, 30 drink Tea, 25 drink Coffee, and 10 drink both Tea and Coffee. How many people drink neither Tea nor Coffee? (A) 3 (B) 4 (C) 5 (D) 8 **Answer: C**
Q927. Which description best represents the Venn relationship between: Vehicles, Cars, and Airplanes? (A) Cars and Airplanes are two mutually exclusive circles, both lying completely inside the Vehicles circle (B) Cars overlap Airplanes; inside Vehicles (C) Three disjoint circles (D) Airplanes inside Cars inside Vehicles **Answer: A**
Q928. In a group of 40 students, 22 like Science and 20 like Math. If 6 students like neither subject, how many students like both subjects? (A) 6 (B) 7 (C) 8 (D) 10 **Answer: C**
Q929. Which relationship best describes the Venn diagram for: Doctors, Females, and Mothers? (A) All Mothers are inside Females; Doctors is a separate circle intersecting both Mothers and Females (B) Three disjoint non-touching circles (C) All Females are inside Mothers (D) Doctors inside Mothers inside Females **Answer: A**
Q930. In a sports club of 60 members, 35 play Tennis, 28 play Badminton, and 12 play both games. How many members play ONLY Badminton? (A) 14 (B) 15 (C) 16 (D) 18 **Answer: C**
Q931. Given the statements: 1. All birds have wings. 2. All parrots are birds. Conclusion: All parrots have wings. Is this conclusion logically valid? (A) Definitely True (Valid) (B) Definitely False (C) Cannot be determined (D) Partially True **Answer: A**
Q932. Statements: 1. All squares are rectangles. 2. All rectangles are quadrilaterals. Conclusion: All squares are quadrilaterals. Determine whether the conclusion is valid: (A) Valid (B) Invalid (C) Uncertain (D) False **Answer: A**
Q933. Statements: 1. All cats are mammals. 2. All mammals breathe air. Conclusion: All cats breathe air. What can be said about this conclusion? (A) It logically follows. (B) It does not follow (C) It is false. (D) It is irrelevant **Answer: A**
Q934. Statements: 1. Some pens are blue. 2. All blue things are ink items. Conclusions: I. Some pens are ink items. II. All pens are ink items. Which conclusion(s) logically follow? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both I and II follow (D) Neither follows **Answer: A**
Q935. Statements: 1. All fruits are sweet. 2. No sweet thing is bitter. Conclusion: No fruit is bitter. Does this conclusion follow? (A) Yes, it logically follows (B) No, it does not follow (C) Only some fruits are not bitter (D) Cannot be determined **Answer: A**
Q936. Statements: 1. Some teachers are writers. 2. All writers are readers. Conclusions: I. Some readers are teachers. II. All teachers are readers. Which conclusion is valid? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**
Q937. Statements: 1. All trees need water to survive. 2. A neem is a tree. Conclusion: A neem needs water to survive. Is this conclusion correct? (A) Yes, logically valid (B) No, invalid (C) Doubtful (D) False **Answer: A**
Q938. Statements: 1. All lions are carnivores. 2. Some carnivores live in water. Conclusions: I. Some lions live in water. II. All lions are carnivores. Which conclusion logically follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both I and II follow (D) Neither follows **Answer: B**
Q939. Statements: 1. No reptile has feathers. 2. All snakes are reptiles. Conclusions: I. No snake has feathers. II. Some snakes have feathers. Which conclusion follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**
Q940. Statements: 1. All pencils are sharp objects. 2. Some sharp objects are knives. Conclusions: I. Some pencils are knives. II. Some knives are sharp objects. Which conclusion is logically sound? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: B**
Q941. Statement: "Regular morning exercise improves physical health." Conclusion: A person who engages in regular morning exercise improves their physical health. Does this conclusion follow from the statement? (A) Yes, it directly follows (B) No, it does not follow (C) It contradicts the statement (D) Cannot be determined **Answer: A**
Q942. Statement: "Boiling drinking water kills harmful microorganisms and bacteria." Conclusion: Drinking boiled water reduces the risk of water-borne bacterial infections. Does the conclusion logically follow? (A) Yes, it logically follows (B) No, it is unrelated (C) It is false (D) Cannot be decided **Answer: A**
Q943. Statement: "Trees absorb carbon dioxide and release oxygen during the daytime." Conclusion: Planting more trees helps reduce carbon dioxide levels in the daytime atmosphere. Does this conclusion follow? (A) Yes, it follows directly (B) No, it is incorrect (C) It is irrelevant (D) Only on weekends **Answer: A**
Q944. Statement: "Only students who score above 75% in the examination are eligible for the merit scholarship." Conclusion I: Ronan scored 82% and is eligible for the scholarship. Conclusion II: Every student in the school receives a scholarship. Which conclusion follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both I and II follow (D) Neither follows **Answer: A**

Q945. Statement: "Excessive screen time right before bedtime causes difficulty in falling asleep." Conclusion I: Avoiding excessive screen time before bed can help improve the onset of sleep. Conclusion II: Digital screens produce sound waves only. Which conclusion follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**

Q946. Statement: "All students of Class 7 passed the annual science examination." Conclusion I: Neha is a student of Class 7, so she passed the science examination. Conclusion II: Some students of Class 7 failed the examination. Which conclusion follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**

Q947. Statement: "Consuming green leafy vegetables provides essential dietary iron and vitamins." Conclusion I: Green leafy vegetables are beneficial for human nutrition. Conclusion II: People should avoid eating all vegetables. Which conclusion is valid? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**

Q948. Statement: "Wearing a helmet while riding a two-wheeler drastically reduces head injury risks." Conclusion I: Helmets provide protection against severe head trauma for two-wheeler riders. Conclusion II: Two-wheelers should be completely banned. Which conclusion follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**

Q949. Statement: "Electric vehicles do not produce tailpipe exhaust emissions." Conclusion I: Using electric vehicles helps eliminate direct tailpipe air pollution on roadways. Conclusion II: Electric vehicles do not require any energy to run. Which conclusion follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**

Q950. Statement: "Reading books broadens vocabulary and strengthens reading comprehension." Conclusion I: Regular book reading can help a student expand their word knowledge. Conclusion II: People should stop reading books. Which conclusion logically follows? (A) Only conclusion I follows (B) Only conclusion II follows (C) Both follow (D) Neither follows **Answer: A**

Q951. Identify the missing shape in the repeating cycle: Circle, Triangle, Square, Circle, Triangle, Square, Circle, ? (A) Circle (B) Triangle (C) Square (D) Pentagon **Answer: B**

Q952. A n a r r o w r o t a t e s i n a c o n s i s t e n t s e q u e n c e : U p (↑) , R i g h t (→) , D o w n (↓) , L e f t (←) , U p (↑) , R i g h t (→) , ? What orientation comes next? (A) U p (↑) (B) D o w n (↓) (C) L e f t (←) (D) S l a n t e d d i a g o n a l (↗) **Answer: B**

Q953. A card sequence displays dot patterns: 1 dot, 3 dots, 5 dots, 7 dots, ? How many dots should appear on the next card? (A) 8 dots (B) 9 dots (C) 10 dots (D) 11 dots **Answer: B**

Q954. In a 3×3 grid with alternating shaded cells like a chessboard: Row 1: Black, White, Black Row 2: White, Black, White Row 3: Black, White, ? What color should occupy the third cell in Row 3? (A) White (B) Black (C) Gray (D) Transparent **Answer: B**

Q955. Consider the geometric sequence: Triangle (3 sides), Quadrilateral (4 sides), Pentagon (5 sides), Hexagon (6 sides). What polygon naturally comes next in this progression? (A) Octagon (B) Nonagon (C) Heptagon (D) Decagon **Answer: C**

Q956. Which term continues the pattern? A1, B2, C3, D4, ? (A) E4 (B) E5 (C) F5 (D) E6 **Answer: B**

Q957. A square spiral has successive segment lengths of 2 cm, 4 cm, 8 cm, 16 cm. What is the length of the next segment? (A) 24 cm (B) 28 cm (C) 32 cm (D) 64 cm **Answer: C**

Q958. A circle is divided into four quadrants. The shaded quadrant moves sequentially: Top-Right, Bottom-Right, Bottom-Left, ? Which quadrant is shaded next? (A) Top-Right (B) Top-Left (C) Center (D) Bottom-Right **Answer: B**

Q959. A figure consists of 1 large outer square containing 3 smaller concentric squares drawn inside it, none of which touch. How many total squares are present in the diagram? (A) 3 (B) 4 (C) 6 (D) 9 **Answer: B**

Q960. In a visual progression, each stage adds one straight line segment: Stage 1 = 1 segment (line), Stage 2 = 2 segments (angle), Stage 3 = 3 segments (triangle), Stage 4 = 4 segments (quadrilateral). What closed geometric figure represents Stage 5? (A) Hexagon (B) Heptagon (C) Pentagon (D) Circle **Answer: C**

Q961. How many straight line edges (sides) does a regular hexagon have? (A) 5 (B) 6 (C) 7 (D) 8 **Answer: B**

Q962. If a square paper sheet is cut along its diagonal from one corner to the opposite corner, what type of two triangles are formed? (A) Equilateral triangles (B) Right-angled isosceles triangles (C) Scalene obtuse triangles (D) Acute non-isosceles triangles **Answer: B**

Q963. How many corner vertices does a standard three-dimensional cube have? (A) 6 (B) 8 (C) 10 (D) 12 **Answer: B**

Q964. A large square is divided into a 3×3 grid of 9 small equal unit squares. How many total squares of all possible sizes exist in this grid? (A) 9 (B) 13 (C) 14 (D) 16 **Answer: C**

Q965. When both diagonals of a rectangle are drawn, they intersect at the center. How many total triangles are formed in the figure? (A) 4 (B) 6 (C) 8 (D) 10 **Answer: C**

Q966. What is the measure of each interior angle in a regular pentagon? (A) 90° (B) 108° (C) 120° (D) 135° **Answer: B**

Q967. A solid 3×3×3 cube is painted red on all outer surfaces and cut into 27 unit cubes of 1×1×1 each. How many small unit cubes have paint on exactly THREE of their faces? (A) 4 (B) 6 (C) 8 (D) 12 **Answer: C**

Q968. In the same painted 3×3×3 cube cut into 27 smaller 1×1×1 unit cubes, how many unit cubes have NO faces painted at all? (A) 0 (B) 1 (C) 2 (D) 4 **Answer: B**

Q969. A rectangular tile measures 8 cm in length and 6 cm in width. What is the length of its diagonal? (A) 9 cm (B) 10 cm (C) 12 cm (D) 14 cm **Answer: B**

Q970. How many internal diagonals can be drawn inside a convex regular hexagon? (A) 6 (B) 8 (C) 9 (D) 12 **Answer: C**

Q971. Which of the following capital English letters appears completely unchanged when viewed in a vertical plane mirror? (A) B (B) P (C) M (D) R **Answer: C**

Q972. Which of the following letters has a water image (horizontal reflection along the bottom) that looks identical to the original letter? (A) F (B) H (C) J (D) L **Answer: B**

Q973. Which digit from 0 to 9 looks identical to itself when reflected in a vertical mirror? (A) 2 (B) 5 (C) 8 (D) 9 **Answer: C**

Q974. A wall clock showing 3:00 is placed in front of a vertical mirror. What time does the reflected clock face appear to show? (A) 6:00 (B) 8:00 (C) 9:00 (D) 12:00 **Answer: C**

Q975. Which of the following three-letter words looks exactly the same when read in a vertical mirror? (A) CAT (B) DOG (C) MOM (D) PEN **Answer: C**

Q976. The reflection of an analog clock in a vertical mirror appears to show 4:30. What is the actual time on the clock? (A) 6:30 (B) 7:30 (C) 8:30 (D) 9:30 **Answer: B**

Q977. A n a r r o w p o i n t s h o r i z o n t a l l y t o t h e r i g h t (→) . W h e n a v e r t i c a l m i r r o r i s p l a c e d t o i t s r i g h t , i n w h i c h d i r e c t i o n d o e s t h e r e f l e c t e d a r r o w p o i n t ? (A) U p w a r d s (↑) (B) D o w n w a r d s (↓) (C) T o t h e l e f t (←) (D) D i a g o n a l l y (↗) **Answer: C**

Q978. Which of the following two-digit numbers has a water image (horizontal mirror) that appears identical to the original number? (A) 12 (B) 45 (C) 88 (D) 79 **Answer: C**

Q979. When the word "BOX" is placed facing a vertical mirror, in what sequence (from left to right) do the reflected letters appear? (A) B, O, X (B) X, O, laterally inverted B (C) O, B, X (D) X, B, O **Answer: B**

Q980. An analog clock displays the actual time of 8:20. What time is indicated by its reflection in a vertical plane mirror? (A) 3:20 (B) 3:40 (C) 4:20 (D) 4:40 **Answer: B**

Q981. If today is Monday, what day of the week will it be exactly 7 days from today? (A) Sunday (B) Monday (C) Tuesday (D) Wednesday **Answer: B**

Q982. How many total calendar days are there in a leap year? (A) 364 days (B) 365 days (C) 366 days (D) 367 days **Answer: C**

Q983. How many hours does the hour hand of a standard analog clock take to complete one full 360° circular rotation? (A) 6 hours (B) 12 hours (C) 24 hours (D) 60 hours **Answer: B**

Q984. If January 1st of an ordinary (non-leap) year is a Sunday, what day of the week is December 31st of the same year? (A) Friday (B) Saturday (C) Sunday (D) Monday **Answer: C**

Q985. What is the angle formed between the minute hand and the hour hand of an analog clock at 3:00? (A) 60° (B) 90° (C) 120° (D) 180° **Answer: B**

Q986. If three days ago was Friday, what day of the week will tomorrow be? (A) Sunday (B) Monday (C) Tuesday (D) Wednesday **Answer: C**

Q987. How many minutes does the minute hand of a clock take to sweep through an angle of 180°? (A) 15 minutes (B) 20 minutes (C) 30 minutes (D) 45 minutes **Answer: C**

Q988. If 15th August of a certain year was a Wednesday, what day of the week was 22nd August of that same year? (A) Monday (B) Tuesday (C) Wednesday (D) Thursday **Answer: C**

Q989. What is the smaller angle between the hour hand and the minute hand of a clock at 4:30? (A) 30° (B) 45° (C) 60° (D) 75° **Answer: B**

Q990. In an ordinary (non-leap) year, if 1st March is a Wednesday, what day of the week was 1st February of that same year? (A) Monday (B) Tuesday (C) Wednesday (D) Thursday **Answer: C**

Q991. I n a w h i m s i c a l g a m e , a d u c k (2 l e g s) w a s a w a r d e d 1 9 a s p i d e r (8 l e g s) w a s a w a r d e d 3 0 , a n d a b e e (6 l e g s) w a s a w a r d e d 2 7 . Following this rule, how much should be given to a cat with 4 legs? (A) 12 (B) 16 (C) 18 (D) 20 **Answer: C**

Q992. If 3 cats can catch 3 mice in 3 minutes, how many cats are needed to catch 100 mice in 100 minutes? (A) 3 cats (B) 30 cats (C) 100 cats (D) 300 cats **Answer: A**

Q993. A snail climbs a 10-meter pole. Each day it climbs up 3 meters, but slides down 2 meters each night. On which day will the snail first reach the top of the pole? (A) 7th day (B) 8th day (C) 9th day (D) 10th day **Answer: B**

Q994. I am an odd number word. Take away my first letter and I become "even". What number word am I? (A) ONE (B) FIVE (C) SEVEN (D) NINE **Answer: C**

Q995. In a family, each of the 4 brothers has exactly 1 sister. How many children are there in total in this family? (A) 4 children (B) 5 children (C) 8 children (D) 10 children **Answer: B**

Q996. A farmer has 17 sheep in a pasture. A sudden illness strikes and "all but 9 die." How many sheep remain alive? (A) 8 (B) 9 (C) 0 (D) 17 **Answer: B**

Q997. Two fathers and two sons go fishing together. Each person catches exactly one fish, yet they bring home a total of only 3 fish. How is this possible? (A) One fish was lost (B) They are grandfather, father, and son (3 people in total) (C) One person did not fish (D) One fish escaped **Answer: B**

Q998. A grandfather, two fathers, and two sons went to a movie theater together. What is the minimum number of tickets they needed to purchase so that each person has a ticket? (A) 2 (B) 3 (C) 4 (D) 5 **Answer: B**

Q999. You have 9 identical-looking gold coins, but one is a lighter counterfeit coin. Using a two-pan balance scale without weights, what is the minimum number of weighings guaranteed to locate the counterfeit coin? (A) 1 weighing (B) 2 weighings (C) 3 weighings (D) 4 weighings **Answer: B**

Q1000. A train 100 meters long travels at a uniform speed of 36 km/h. How many seconds does the train take to completely pass a stationary telegraph pole? (A) 5 seconds (B) 8 seconds (C) 10 seconds (D) 12 seconds **Answer: C**

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WEBSITE
www.ntdsproject.co.in

CELL
9491348482

EMAIL
ntdsproject.knl@gmail.com

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