AN INSTITUTE FOR CBSE BOARD AND JEE-IIT, NEET PREPARATION

SANCO_EDUCATION

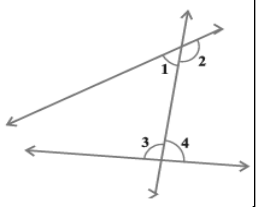
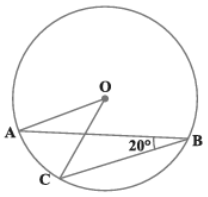
SAN CO EDUCATION, WN 19, Jhulelal Dharamshala Square, Gondiya Road
Balaghat, 8319296255, 8989422109, www.sancoeducation.co.in

Series: CB/MN25/25/KV	**SQP 11 [Theory]**	**Code No. S26D11**
Roll No:		
Time: 3 Hours	**Subject – Mathematics [IX]**	**MM:80**

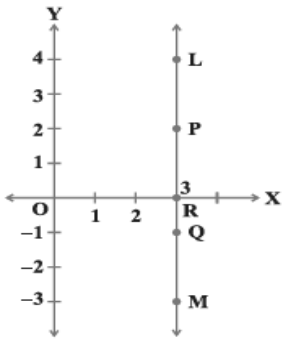
General Instructions:

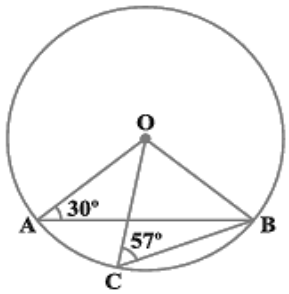
1. ***All questions are compulsory.***
2. *This question paper contains 38 questions.*
3. *There is no overall choice. However internal choices are provided in some questions.*
4. *Question paper is divided into five sections: **Section-A** contains 18 Multiple Choice Questions and 02 Assertion Reason based questions each carry 1 mark, **Section-B** contains 05 questions each carry 2 marks, **Section-C** contains 06 questions each carry 3 marks, **Section-D** contains 4 question each carry 5 marks and **Section-E** contains 3 questions each carry 4 marks.*
5. *Draw neat and clean figures wherever required.*

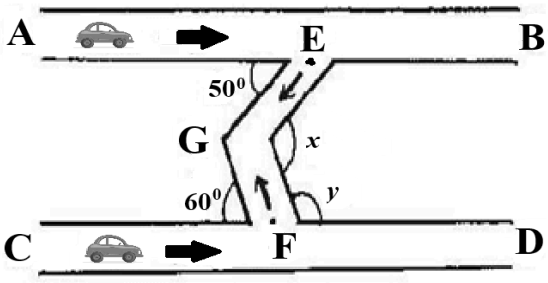
Q No	Section-A (20x1 = 20 marks)	Marks
Q 1.	Which of the following statements is true? (a) Every irrational number can be represented as a fraction. (b) Every irrational number can be represented with the help of decimals. (c) Every rational number can be represented as a fraction. (d) Every rational number can be represented as an integer.	**1**
Q 2.	If $(3^3)^2 = 9^x$ then 4^x =? a) 1 b) 4 c) 16 d) 64	**1**
Q 3.	Which of the following expression is polynomial in one variable. a) $4x^2 - 3x + 7$ b) $4x^2 - 3y + 7$ c) $2\sqrt{x} + 5$ d) $y + \frac{1}{y}$	**1**
Q 4.	Find the value of: $(-12)^3 + (7)^3 + (5)^3$ a) 1275 b) 1260 c) – 1240 d) – 1260	**1**
Q 5.	If P (x) = $2x^2 - 4x + 3$, then P (–1) =? a) 1 b) 5 c) 9 d) – 3	**1**
Q 6.	Which one of the following options is true, the equation y = 3x + 5 has a) A unique solution b) Two solutions c) No solution d) Many solutions	**1**

Q 7.	Which one option is correct for the equation $3y - 2x = 5(x + y) - 4$ expressed in standard from of linear equation as $\boldsymbol{ax + by + c = 0}$? a) $7x + 2y - 4 = 0$ b) $-7x + 2y + 4 = 0$ c) $-7x - 2y - 4 = 0$ d) $7x - 2y + 4 = 0$	**1**
Q 8.	Name of each part of the plane formed by horizontal and vertical lines in a cartesian plane. a) Origin b) Abscissa c) Ordinate d) Quadrant	**1**
Q 9.	In adjacent figure, according to Euclid's 5th postulate, the pair of angles, having the sum less than 180° is: a) 1 and 2 b) 2 and 4 c) 1 and 3 d) 3 and 4 	**1**
Q 10. **0**	The supplement of an angle y is: a) $90^0 + y$ b) $90^0 - y$ c) $180^0 + y$ d) $180^0 - y$	**1**
Q 11. **1**	In ΔABC, BC = AB and $\angle B = 80°$. Then $\angle A$ is equal to a) 80^0 b) 50^0 c) 20^0 d) 10^0	**1**
Q 12. **2**	If the diagonals of a quadrilateral are equal and bisect at right angles, then the quadrilateral is a) Square b) Rectangle c) Rhombus d) Parallelogram	**1**
Q 13.	A diagonal of a rectangle is inclined to one side of the rectangle at 25º. The acute angle between the diagonals is a) 55^0 b) 50^0 c) 40^0 d) 25^0	**1**
Q 14.	Which of the following statement is **incorrect**? a) Equal chords of a circle subtend equal angles at the centre. b) The perpendicular from the centre of a circle to a chord trisects the chord. c) Angles in the same segment of a circle are equal. d) Equal chords of a circle are equidistant from the centre.	**1**
Q 15.	In adjacent figure, if $\angle ABC = 20º$, then $\angle AOC$ is equal to: a) 20^0 b) 50^0 c) 40^0 d) 70^0 	**1**
Q 16.	The edges of a triangular board are 6 m, 8 m and 10 m. what is the cost of painting it at the rate of ₹5 per square metre a) ₹70 b) ₹80 c) ₹120 d) ₹240	**1**
Q 17.	If volume and surface area of a sphere is numerically equal, then its diameter is a) 2 units b) 3 units c) 4 units d) 6 units	**1**

Q 18.	In the class intervals 15 – 25, 25 – 35, the number 25 is included in a) 15 – 25 b) 25 – 35 c) both d) none	**1**
	DIRECTION: In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option from the following. a) Both Assertion and Reason are **TRUE** and Reason is the correct explanation of Assertion. b) Both Assertion and Reason are **TRUE** but Reason is not the correct explanation of Assertion. c) Assertion is **TRUE** but Reason is **FALSE**. d) Assertion is **FALSE** but Reason is **TRUE**.	
Q 19.	**Assertion (A):** The polynomial p (x) = $4x^3 - 3x^2 + 5x - 6$ when divided by (x – 1) gives zero as the remainder. **Reason (R):** (x – 1) is a factor of the polynomial p (x) = $4x^3 - 3x^2 + 5x - 6$	**1**
Q 20.	**Assertion (A):** If the angles of a quadrilateral are x, (x + 30), (x − 30) and 2x, the measure of the smallest angle is 52^0. **Reason (R):** The sum of all angles of a quadrilateral is 360^0.	**1**
	Section - B (5x2 = 10 marks)	
Q 21.	Use the Factor Theorem to determine whether g(x) is a factor of p(x) in the following case: p(x) = $2x^3 + x^2 - 2x - 1$, g(x) = x + 1 OR Find the value of k, if y + 3 is a factor of $3y^2 + ky + 6$	**2**
Q 22.	If a point C lies between two points A and B such that AC = BC, then prove that AC = $\frac{1}{2}$ AB. Explain by drawing the figure.	**2**
Q 23.	Prove that a diagonal of a parallelogram divides it into two congruent triangles. OR In the rhombus PQRS, PQ = 5 cm, PR = 8 cm. Find the length of the diagonal SQ.	**2**
Q 24.	The hollow sphere, in which the circus motorcyclist performs his stunts, has a diameter of 14 m. Find the area available to the motorcyclist for riding. OR A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity of pit in kilolitres?	**2**
Q 25.	The air distances of four cities from Delhi (in km) are given City | Kolkata | Mumbai | Chennai | Hyderabad Distance from Delhi (km) | 1340 | 1100 | 1700 | 1250 Draw a bar graph to represent the above data.	**2**
	Section - C (6x3 = 18 marks)	
Q 26.	Find three different irrational numbers between the rational numbers $\frac{5}{7}$ and $\frac{11}{13}$.	**3**

	OR Express 0. 4 $\overline{17}$ in the form of p/q , where p and q are integers and q ≠ 0.	
Q 27.	Verify that: $x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)[(x - y)^2 + (y - z)^2 + (z - x)^2]$ OR Factorise : $x^3 - 3x^2 - 9x - 5$	**3**
Q 28.	Express the following linear equations in the form ax + by + c = 0 and indicate the values of a, b and c in each case: (i) $3y + 2x = 9.3\overline{5}$ (ii) $x + \frac{y}{5} - 10 = 0$ (iii) $-3x + 2 = 0$	**3**
Q 29.	If the point (3, 4) lies on the graph of 3y = ax + 7, then find the value of a.	**3**
Q 30.	In the adjoining figure, LM is a line parallel to the y-axis at a distance of 3 units. Find, (i) What are the coordinates of the points P, R and Q? (ii) What is the difference between the abscissa of the points L and ordinate of M? 	**3**
Q 31.	A random survey of the number of children of various age groups playing in a park was found as follows: Draw a histogram to represent the data. Age (in years) | Number of children 1 - 2 | 5 2 - 3 | 3 3 - 5 | 6 5 - 7 | 12 7 - 10 | 9 10 - 15 | 10 15 - 17 | 4	**3**
	Section - D (4x5 = 20 marks)	
Q 32.	Represent $\sqrt{9.7}$ on the number line and justify your answer. OR Show how $\sqrt{6}$ can be represented on the number line by square root spiral.	**5**
Q 33.	Prove that the diagonal divides a parallelogram into two congruent triangles. ΔABC in which E and F are mid point of AB and BC respectively, if AE = 4 cm find AB.	**5**
Q 34.	Three boys Ashutosh, Bharat and Mridul are playing a game by standing on a circle of radius 10 m drawn in a park. Ashutosh throws a ball to Bharat, Bharat to Mridul, Mridul to Ashutosh. If the distance between Ashutosh and Bharat and between Bharat and Mridul is 12 m each, what is the distance between Ashutosh and Mridul?	**5**

	OR In the adjacent figure, ∠OAB = 30º and ∠OCB = 57º. Find (i) ∠AOC (ii) ∠ABC (iii) If intersecting point of AB and OC is P, find ∠OPB  	
Q 35.	The surface area of a sphere of radius 5 cm is five times the area of the curved surface of a cone of radius 4 cm. Find the height and the volume of the cone. **OR** A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs. 4989.60. If the cost of white-washing is Rs. 20 per square metre, find the (i) Inside surface area of the dome, (ii) Inner radius of the dome (iii) Volume of the air inside the dome.	**5** **2** **1** **2**
	Section - E (4x3 = 12 marks)	
Q 36.	**Swimming Pool Construction** Rajan has a form house in Patiala. He has a swimming pool also inside his form house, in the shape of a rectangular prism with a length of 5x + 10 meters, width 3x + 5 meters, and depth x + 2 meters.  On the basis of the above information, answer the following: (a) Write a polynomial to represent the volume of the pool. (b) If x = 1, calculate the volume of swimming pool. (c) The cost of filling the pool with water is ₹8 per cubic meter. Determine the total cost to fill the pool. OR If Rajan wants to paint the walls of the pool, Determine the area to be painted.	 **1** **1** **2**
Q 37.	Two cars are moving on two parallel roads represented as AB and CD respectively in the given figure. First car reaches at point E and takes a turn towards its right at an angle of 50^0. At the same time, second car reaches at point F and takes a turn towards its left at an angle	

	of 60^0. They both meet at a point G. Based on the above information and given figure, answer the following question (without considering the width of the roads)  (a) What will be the measure of angle y marked in the figure? (b) What will be the measure of ∠EGF marked as x? (c) What will be the measure of reflex ∠EGF? OR What will be the measure of reflex ∠AEG?	 **1** **1** **2**
Q 38.	Triangles are used in bridges because they evenly distribute weight without changing their proportions. When force is applied on a shape like rectangle it would flatten out. Before triangles were used in bridges, they were weak and could not be very big. To solve that problem engineers would put a post in the middle of a square and make it sturdier. Isosceles triangles were used to construct a bridge in which the base and equal sides of an isosceles triangle are in the ratio 2:3:3 and its perimeter is 40 m.  (a) What are the measurements of the sides of an isosceles triangle? OR Find the semi-perimeter of the above triangle. (b) What is the area of the above isosceles triangle so formed? (c) Find the cost of painting the so formed triangle at the rate of ₹ 18.50 per m^2.	 **1** **2** **1**