

**“KENDRIYA VIDYALAYA SANGATHAN, AGRA REGION” PRE-BOARD
EXAMINATION 2024-25 (SET 3)**

CLASS X

SCIENCE 086 (2024-25)

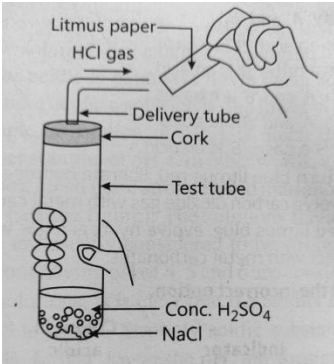
Max. Marks: 80

Time allowed: 3hours

General Instructions:

- 1. All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.*
- 2. Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.*
- 3. Section B would have 6 Short Answer (SA) type questions carrying 02 marks each.*
- 4. Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.*
- 5. Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.*
- 6. Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1/2/3 marks.*

Section-A		
Questions 1 to 16 are multiple choice questions. Only one of the choices is correct. Select and write the correct choice as well as the answer to these questions.		
1.	The equation : $\text{Cu} + \text{XHNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + \text{YNO}_2 + 2\text{H}_2\text{O}$ The value of X and Y are : A. 3 and 5 B. 8 and 6 C. 4 and 2 D. 7 and 1	1
2.	A student studying the chemical properties of metals and finds incomplete chemical reactions in his book, as shown: $\text{MgO} + \text{HNO}_3 \rightarrow$ Which option completes the reaction ? A. $\text{MgO} + \text{HNO}_3 \rightarrow \text{Mg}_3\text{N}_2 + 4\text{H}_2\text{O}$ B. $\text{MgO} + \text{HNO}_3 \rightarrow \text{Mg} + \text{NO}_2 + \text{O}_2$ C. $\text{MgO} + \text{HNO}_3 \rightarrow \text{Mg}(\text{OH})_2 + 2\text{NO}_2$ D. $\text{MgO} + \text{HNO}_3 \rightarrow \text{Mg}(\text{NO}_3)_2 + \text{H}_2\text{O}$	1
3.	The figure given below represents the experiment carried out between conc. Sulphuric acid and sodium chloride, which react with each other to form HCl gas.	1

	 Blue litmus paper is brought near the mouth of the delivery tube to check the presence of HCl acid but no change is observed in the colour of litmus paper because: A. The litmus paper used is dry B. The litmus paper used is moist C. Blue litmus paper does not change its colour with an acid D. The litmus paper is kept very close to the mouth of the delivery tube.	
4.	An aqueous solution 'A' turns the phenolphthalein solution pink. On addition of an aqueous solution 'B' to 'A', the pink colour disappears. Which of the following statement is true for the solutions 'A' and 'B'. A. A is strongly basic and B is a weak base. B. A is strongly acidic and B is a weak acid. C. A has a pH greater than 7 and B has a pH less than 7. D. A has a pH less than 7 and B has a pH greater than 7.	1
5.	Reema took 5ml of lead nitrate solution in a beaker and added approximately 4ml of potassium iodide solution to it. What would she observe? A. The solution turned red B. Yellow precipitate was formed C. White precipitate was formed D. The reaction mixture became hot.	1
6.	Which of the following oxide(s) of iron would be obtained on prolonged reaction of iron with steam? A. FeO B. Fe₂O₃ C. Fe₃O₄ D. Fe₂O₃ and Fe₃O₄	1
7.	A student took sodium sulphate solution in a test tube and added barium chloride solution to it. He observed that an insoluble substance has formed. The colour and molecular formula of the insoluble substance is : A. Grey, BaSO₄ B. Yellow, Ba(SO₄)₂ C. White, BaSO₄ D. Pink, BaSO₄	1
8.	The correct statements with reference to single celled organisms are: A. Complex substances are not broken down into simpler substances B. Simple diffusion is sufficient to meet the requirement of exchange of gases C. Specialised tissues perform different functions in the organism D. Entire surface of the organism is not in contact with the environment for taking in food	1

9.	The table shows the characteristics of blood in one blood vessel of the body. Which blood vessel contains blood with these characteristics? <table border="1"> <tr> <td>Oxygen concentration</td><td>Carbondioxide concentration</td><td>Pressure</td></tr> <tr> <td>High</td><td>Low</td><td>High</td></tr> </table> A. Aorta C. Pulmonary vein B. Pulmonary artery D. vena cava	Oxygen concentration	Carbondioxide concentration	Pressure	High	Low	High	1
Oxygen concentration	Carbondioxide concentration	Pressure						
High	Low	High						
10.	Which of the following statements about the autotrophs is incorrect? A. They synthesis carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll B. They store carbohydrates in the form of starch C. They convert carbon dioxide and water into carbohydrates in the absence of sunlight D. They constitute the first trophic level in food chains	1						
11.	Dramatic changes of body features associated with puberty are mainly because of secretion of: A. Oestrogen from testes and testosterone from ovary B. Oestrogen from adrenal gland and testosterone from pituitary gland C. Testosterone from testes and oestrogen from ovary D. Testosterone from thyroid gland and oestrogen from pituitary gland	1						
12.	If two parents have the genotypes AA × aa, the probability of having an aa genotype in the F₁ generation is : A. 25 percent C. 75 percent B. 50 percent D. None of these	1						
13.	Bio magnification refers to the increase in the A. Body weight of organism B. Growth of phytoplanktons C. The amount of harmful chemicals in the successive trophic levels of a food chain. D. No. of plants and animals in an area	1						
14.	Shweta wants to obtain a sharp image beyond 2F using a convex lens, where the object should be placed? A. At infinity C. At F1 B. Between F1 and 2F1 D. Between F1 and O	1						
15.	The sky appears dark to passengers flying at very high altitudes mainly because : A. scattering of light is not enough at such heights B. there is no atmosphere at great heights. C. the size of molecules is smaller than the wavelength of visible light D. the light gets scattered towards the earth	1						
16.	The decomposers in an ecosystem: A. convert inorganic material to simpler forms	1						

	B. convert organic material to inorganic forms C. convert inorganic materials into organic compounds D. do not breakdown organic compounds	
	Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true	
17.	Assertion (A) : During electrolysis of concentrated aqueous solution of sodium chloride, chlorine gas is given off at the cathode and hydrogen gas at the anode. Reason (R) : Ions in electrolytes are attracted to the oppositely charged electrodes.	1
18.	Assertion (A) : The offspring produced by sexual reproduction is likely to adjust better in environmental fluctuation. Reason (R) : During the fusion of gametes there is mixing of genetic material from two parents.	1
19.	Assertion (A) : When a concave mirror is held under water, its focal length will increase Reason (R) : The focal length of a concave mirror depends on the medium in which it is placed	1
20.	Assertion (A) : Polythene bags and plastic container are non biodegradable substances Reason (R) : They can be broken down by microorganisms in natural simple harmless substances	1
	Section-B Question No. 21 to 26 are very short answer questions	
21.	Identify the reducing agent in the following reactions: (i) $\text{H}_2\text{O} + \text{F}_2 \rightarrow \text{HF} + \text{HOF}$ (ii) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$	2
22.	List two different functions performed by pancreas in our body .	2
23.	What is the advantage of having four chambered heart?	2
24.	A concave mirror has a focal length of 20cm. At what distance from the mirror should a 4cm tall object be placed so that it forms an image at a distance of 30cm from the mirror? Also calculate the size of the image formed.	2
25.	Show how would you join three resistors, each of resistance 9Ω so that the equivalent resistance of the combination is (i) 13.5Ω (ii) 6Ω OR Why does the cord of an electric oven does not glow while its heating element does?	2
26.	Consider the food chain: Grass → deer → Lion What will happen if all the :	2

[illegible]

	c) Vas deferens (ii) Why are testes located outside the abdominal cavity? (iii) State how sperms move towards the female germ cell. (iv) State the genetic constitution of a sperm. d) Urethra	1 1 1																
36.	An electric lamp of resistance 20Ω and a conductor of resistance 4Ω are connected to a 6V battery as shown in the circuit. Calculate: (i) The total resistance of the circuit (ii) The total current through the circuit (iii) The potential difference across the (a) electric lamp and (b) conductor (iv) Power of the lamp (v) The current across 20 Ω resistance	1 1 1 1 1																
	Section – E Question No. 37 to 39 are case-based/data -based questions.																	
37.	Ethanol, commonly known as alcohol, is an active ingredient of all alcoholic drinks.It is also used in medicines such as tincture iodine, cough syrups and many tonics. Ethanol’s molecular formula is C2H6O which means it has two carbon atoms and one oxygen atom. Inspite of its many benefits, its impact on social behavior has been questioned as consumption of even a small quantity of ethanol can cause drunkenness. Read the above passage carefully and give the answers of the following questions. (i) What happens when a small piece of sodium is dropped into ethanol? (ii) Name the compound formed when ethanol is warmed with ethanoic acid in the presence of few drops of conc. H2SO4 (iii) Why is ethanol used in making tincture iodine, cough syrup etc. (iv) What is the role of conc. H2SO4 in making ethane from ethanol?	1 1 1 1																
38.	Thyroid stimulating hormone (TSH) stimulates thyroid gland to produce thyroxine. Study the table given below. Table: TSH levels during pregnancy <table><tr><td>Stage of pregnancy</td><td>Normal (mU/L)</td><td>Low (mU/L)</td><td>High (mU/L)</td></tr><tr><td>First trimester</td><td>0.2-2.5</td><td><0.2</td><td>2.5-10</td></tr><tr><td>Second trimester</td><td>0.3-3.0</td><td><0.3</td><td>3.0-4.5</td></tr><tr><td>Third trimester</td><td>0.8-5.2</td><td><0.8</td><td>>5.2</td></tr></table> It is important to monitor TSH levels during pregnancy. High TSH levels and hypothyroidism can especially affect chances of miscarriage. Therefore, proper medication in consultation with a doctor is required to regulate/control the proper functioning of the thyroid gland. Read the above passage carefully and give the answers of the following questions. (i) Give the full form of TSH . (ii) Where is thyroid gland situated in our body? (iii) State the main function of TSH. (iv) Why do TSH levels in pregnant women need to be monitored?	Stage of pregnancy	Normal (mU/L)	Low (mU/L)	High (mU/L)	First trimester	0.2-2.5	<0.2	2.5-10	Second trimester	0.3-3.0	<0.3	3.0-4.5	Third trimester	0.8-5.2	<0.8	>5.2	1 1 1 1
Stage of pregnancy	Normal (mU/L)	Low (mU/L)	High (mU/L)															
First trimester	0.2-2.5	<0.2	2.5-10															
Second trimester	0.3-3.0	<0.3	3.0-4.5															
Third trimester	0.8-5.2	<0.8	>5.2															

39.	Ravi wanted to fix the rear-view mirror of his scooter. He knows that rear-view mirror is an essential safety device in the vehicle and allows him to see objects at the backside of his vehicle. He bought two mirrors M_1 and M_2, out of which M_1 is curved inwards and M_2 is curved outwards. Read the above passage carefully and give the answer of the following questions. (i) Based on the given situation, which mirror should Ravi need to fix as his rear-view mirror and why ? (ii) What is the formula for magnification obtained with a mirror? (iii) An object is placed 60cm in front of M_2. The image formed by the mirror is located 30cm behind the mirror. What is the object's magnification ? (iv) An object is placed at the centre of curvature of M_1. Find the distance between its image and pole.	1 1 1 1
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