COMMON PRE-BOARD EXAMINATION 2022-23

Subject: SCIENCE (086)

Class: X | Time: 3 Hours

Date: | Max. Marks: 80

General Instructions:

i. This question paper consists of 39 questions in 5 sections.

ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

iii. Section A consists of 20 objective type questions carrying 1 mark each.

iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.

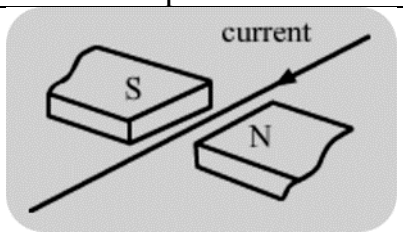
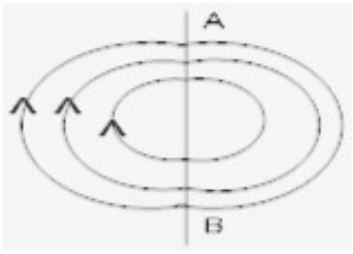
v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words

vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.

vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

	SECTION A	
1.	Which of the following solution will turn phenolphthalein pink. (a) HCl (aq) (b) CO_2 (aq) (c) KOH (aq) (d) H_2SO_4 (aq)	1
2.	Which of the following is/are double displacement reaction(s)? (i) $Pb + CuCl_2 \rightarrow PbCl_2 + Cu$ (ii) $Na_2SO_4 + BaCl_2 \rightarrow BaSO_4 + 2NaCl$ (iii) $C + O_2 \rightarrow CO_2$ (iv) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ (a) (i) and (iv) (b) (ii) only (c) (iii) and (iv) (d) (i) and (ii)	1
3.	In which of the following compounds, – OH is the functional group? (a) Butanone (b) Butanal (c) Butanol (d) Butanoic acid	1
4.	Sodium hydrogen carbonate when added to acetic acid evolves a gas. Which of the following statements is true about the gas evolved? (i) It turns lime water milky. (ii) It extinguishes a burning splinter. (iii) It burns with POP sound. (iv) It has a pungent odour. (a) (i) and (ii) (b) (i), (ii) and (iii) (c) (ii), (iii) and (iv) (d) (i) and (iii)	1

5	The composition of aqua regia is: (a) Conc. HCl: Conc. HNO_3 = 3 :1 (b) Conc. HCl: Dil. HNO_3 = 3 :1 (c) Dil. HCl: Dil. HNO_3 = 3 :1 (d) Dil. HCl: Conc. HNO_3 = 3 :1	1
6	Match the following with the correct response: **Column A** / **Column B** (i) Plaster of Paris — (a) $CaSO_4 .2H_2O$ (ii) Bleaching Powder — (b) $Na_2CO_3 .10H_2O$ (iii) Washing Soda — (c) $CaSO_4 . ½ H_2O$ (iv) Baking Soda — (d) $CaOCl_2$ (e) $NaHCO_3$ (a) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (e) (b) (i) - (c), (ii) - (d), (iii) - (b), (iv) - (e) (c) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d) (d) (i) - (e), (ii) - (d), (iii) - (a), (iv) - (c)	1
7	Vinegar is a solution of (a) 50% - 60% acetic acid in alcohol (b) 5% - 8% acetic acid in alcohol (c) 5% - 8% acetic acid in water (d) 50% - 60% acetic acid in water	1
8	The opening and closing of the stomatal pore depends upon (a) oxygen (b) temperature (c) water in guard cells (d) concentration of CO_2 in stomata	1
9	The blood leaving the tissues becomes richer in (a) carbon dioxide (b) water (c) haemoglobin (d) oxygen	1
10	Two pea plants, one with round green seeds (RR yy) and another with wrinkled yellow (rrYY) seeds produce F1 progeny that have round yellow (RrYy) seeds. When F1 plants are self-pollinated, the F2 progeny will have a new combination of characters. Choose the new combinations from the following: (i) Round, yellow (ii) Round, green (iii) Wrinkled, Yellow (iv) Wrinkled, green (a) (i) and (ii) (b) (i) and (iv) (c) (ii) and (iii) (d) (i) and (iii)	1

11	A doctor advised a patient to take insulin injection because (a) his blood pressure was low (b) his heart was beating slowly (c) he was suffering from goitre (d) his sugar level in blood was high	1
12	The number of chromosomes in parents and offsprings of a particular species remains constant due to (a) doubling of chromosomes after zygote formation (b) halving of chromosomes during gamete formation (c) doubling of chromosomes after gamete formation (d) halving of chromosomes after gamete formation	1
13	Two resistors of resistances 4Ω and 8Ω when connected with a battery will have (a) Same potential difference across them when connected in parallel. (b) Same potential difference across them when connected in series. (c) Same current flows through them when connected in parallel. (d) Different potential difference across them when connected in parallel.	1
14	A current flows in a wire running between the S and N poles of a magnet lying horizontally as shown. The force on the wire due to the magnet is directed: (a) From N to S (b) From S to N (c) Vertically downwards (d) Vertically upwards 	1
15	A cylindrical conductor of length l and uniform area of cross section A has resistance R. Another conductor of length 2l and resistance R of the same material has area of cross-section (a) A/2 (b) 3A/2 (c) 2A (d) 3A	1
16	Concentric circles with arrows centered at the wire AB are shown in figure. (a) No current flows in AB (b) current flows from B to A (c) current flows from A to B (d) none of these 	1
17	**Assertion** (A): HCl gas does not change the colour of dry blue litmus paper. **Reason** (R): HCl gas dissolves in the water present in wet litmus to form H+ ions. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1

18	**Assertion(A):** Mendel selected the pea plant for his experiments. **Reason (R) :** Pea plant is cross-pollinating and has unisexual flowers, short life cycle and bears visible contrasting traits. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
19	**Assertion** : Phloem helps in translocation of food from the leaves. **Reason**: Phloem provides mechanical support to plant. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
20	**Assertion :** The direction of force is given by Fleming's left hand rule. **Reason :** A magnetic field exert a force on a moving charge in the same direction as the direction of field itself. (a) Both A and R are true and R is the correct explanation of A. (b) Both A and R are true but R is not the correct explanation of A. (c) A is true but R is false. (d) A is false but R is true.	1
	SECTION-B	
21	Explain why (a) 2g of ferrous sulphate crystals are heated in a dry boiling tube (i) List any one observation. (ii) Name the type of chemical reaction taking place. (iii) Write a balanced chemical equation for the reaction. **OR** (b) Consider the chemical equation given below and answer the questions that follow: $CuO + H_2 \rightarrow Cu + H_2O$ (i) Name the substance which is getting oxidised. (ii) Name the substance which is getting reduced. (iii) Name the oxidising agent. (iv) Name the reducing agent.	2
22	The respiratory organs are well adapted to carry out efficient exchange of gases. Mention any two characteristics of alveoli in human that ensures efficient exchange of gases.	2
23	How do platelets help in minimising blood loss during injury? What would happen if the bleeding is not minimized or stopped?	2
24	Sometimes we come across people who are either very short (dwarfs) or extremely tall (giants). Name the hormone and the gland responsible for this. Mention the function of this hormone. What will happen if there is a deficiency of this hormone?	2

25	Give reasons: (i) The extent of deviation of a ray of light on passing through a glass prism depends on its colour. (ii) Lights of red colour are used for danger signals. **OR** A glass prism is able to produce a spectrum when white light passes through it but a rectangular block of same transparent glass does not produce any spectrum. Why?	2
26	The number of malarial patients in a village increased tremendously, when a large number of frogs were exported from the village. What could be the cause for it? Explain with the help of a food chain?	2
	SECTION-C	
27	Compound 'A' when dissolved in water gives compound 'B' which is used in white washing. Compound 'B' reacts with CO_2 to form a white precipitate of compound 'C'. Identify Compounds 'A', 'B', and 'C'. also write the equations involved.	3
28	(a) If someone is suffering from the problem of acidity after overeating; which of the following would you suggest as a remedy? Lemon juice, Baking soda or Vinegar (b) Two solutions X and Y have pH values of 3.0 and 9.5 respectively. Which of these will turn litmus solution from blue to red and which will turn phenolphthalein from colourless to pink	3
29	(a) What are nephrons? Name their parts. (b) Name the main nitrogenous waste product in human beings. In what form is it excreted out of the body? (c) Name the substances which are selectively reabsorbed as the urine flows along the tube. **OR** If diffusion were to move oxygen in our body, it is estimated that it would take three years for a molecule of oxygen to reach our toes from our lungs. (a) How do transport of oxygen and carbon dioxide take place in human? (b) Mention the normal systolic and diastolic pressures in human.	3
30	An object 3 cm high is placed at a distance of 10 cm in front of a converging mirror of focal length 20 cm. Find the position, nature and size of the image formed.	3
31	A person is suffering from both myopia and hypermetropia. (i) What kind of lenses can correct this defect? (ii) How are these lenses prepared?	3
32	Differentiate between alternating current and direct current. Explain why alternating current is preferred over direct current for transmission over long distances. **OR** What happens to the force acting on a current carrying conductor placed in a magnetic field when, (i) Direction of magnetic field is reversed without changing the direction of current. (ii) Direction of current is reversed without changing the direction of magnetic field. (iii) Direction of both the current and magnetic field is reversed.	3

33	Fruits, vegetables, meat and food grains such as wheat and rice contain varying amounts of pesticide residues. (a) How do harmful chemicals enter the bodies of plants and human? (b) Why does the amount of toxic chemical increase at each trophic level? (c) Which of the following will have the maximum concentration of harmful chemicals in its body? Peacock, Frog, Grass, Snake, Grasshopper.	3
	SECTION-D	
34	(a) Why are certain compounds called hydrocarbons? Write the general formula for the homologous series of alkanes, alkenes, and alkynes and also draw the structure of the first member of each series. Write the name of the reaction that converts alkenes into alkanes and also write a chemical equation to show the necessary conditions for the reaction to occur. **OR** (b) Write the chemical formula and name of the compound which is the active ingredient of all alcoholic drinks. List its two uses. Write the chemical equation and name of the product formed when this compound reacts with (i) sodium metal (ii) hot concentrated sulphuric acid	5
35	(a) Draw a neat and labeled diagram of male reproductive system. (b) What is vas deferens? Write its function. (c) What is the role of the seminal vesicles and the prostate gland? **OR** (a) Draw a neat and labeled diagram of female reproductive system. (b) If a woman was using Copper-T, will it help her protecting from sexually transmitted diseases? Give reason. (c) How do the following prevent pregnancy? (i) Condoms (ii) Oral pills (iii) Implants (iv) Vasectomy	5
36	(a) List the factors on which the resistance of a conductor in the shape of wire depends. (b) Why are alloys commonly used in electrical heating devices? Give reason. (c) A bulb is rated 40 W; 220 V. Find the current drawn by it, when it is connected to a 220 V supply. Also find its resistance.	5
	SECTION-E	
37	The metals in the middle of the activity series such as iron, zinc, lead, copper, etc., are moderately reactive. These are usually present as sulphides or carbonates in nature. It is easier to obtain metal from its oxide, as compared to its sulphides and carbonates. Therefore, prior to reduction, the metal sulphides and carbonates must be converted into metal oxides. The sulphide ores are converted into oxides by heating strongly in the presence of excess air. This process is known as roasting. The carbonate ores are changed into oxides by heating strongly in limited air. This process is known as calcination.	4

	(i) What is Calcination? (ii) Give a suitable example of the process roasting. (iii) What is the process of converting metal oxide to metal? Give an example. **OR** iii) What do you mean by thermit reaction? Give an example.	
38	In a cross between plants with pink flowers and plants with white flowers, all the offsprings of F1 generation had pink flowers. When the F1 progenies were self-crossed, it was observed in the F2 generation that out of 100, 75 flowers were pink. Make a cross of F1 and F2 with the help of punnet square and answer the following: (i) Name the trait appeared in the F1. (ii) Write the genotype of F1 progenies. (iii) Write the phenotypic and genotypic ratios of F2 progenies. **OR** (iii) Define Monohybrid cross.	4
39	Highly polished smooth surface from which most of the light is reflected is called a mirror. There are two types of mirrors; plane mirror and curved mirror. Plane mirror is a mirror whose reflecting surface is plane and a curved mirror is a mirror whose reflecting surface is curved one. It may be of any shape - spherical, elliptical or parabolic. There are two types of spherical mirrors; concave mirror and convex mirror. In a concave mirror, the reflecting surface faces inwards. The reflection takes place only at the inner surface. In a convex mirror, the reflecting surface faces outwards. Thus the spherical mirror that has a convex reflecting surface is called a convex mirror. (i) What is the radius of curvature of a mirror having focal length 15 cm. (ii) What is the nature of the image formed by a concave mirror if the magnification produced by the mirror is +3? (iii) What kind of mirrors are used in the headlights of a motor-car and why? **OR** (iii) An object is placed 60cm in front of a convex mirror. The virtual image formed by the mirror is located 30 cm behind the mirror. What is the magnification? Write the characteristics of the image.	4

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