



DELHI PUBLIC SCHOOL INDIRAPURAM, GHAZIABAD
PRE-BOARD EXAMINATION – 1 : 2023-24

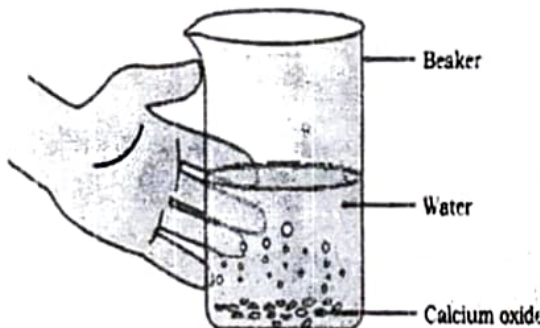
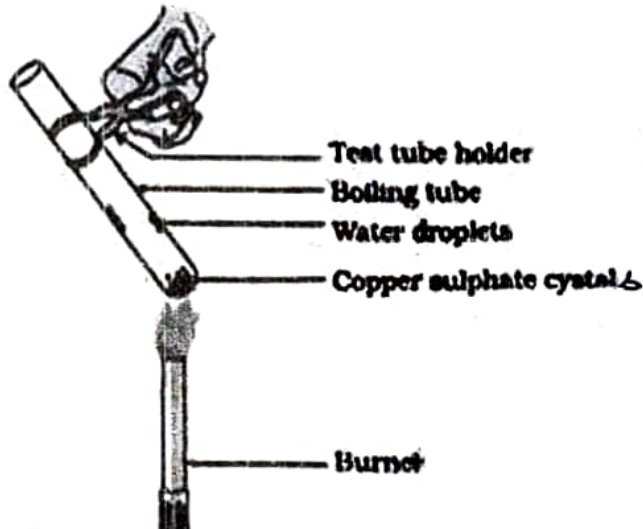
Time: 3 Hours	M. M. 80	CLASS – X SCIENCE SET-B	No. of Q.: 39	No. of Pages: 06
Name			Roll No.	

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 be 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 be 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

Q. no. 1 to 20 are multiple choice questions.

1.	<p>Which of the following statement is correct about the reaction shown below?</p> <p>(a) It is endothermic and combination reaction. (b) It is exothermic and displacement reaction. (c) It is endothermic and displacement reaction. (d) It is exothermic and combination reaction.</p>	[1]
		
2.	<p>In a given reaction, $BaCl_2 + Na_2SO_4 \longrightarrow BaSO_4 + 2NaCl$. The correct sequence of their physical states will be</p> <p>(a) liquid, liquid, solid, solid (b) Aqueous, aqueous, solid, solid (c) Aqueous, aqueous, liquid, liquid (d) Aqueous, aqueous, solid, aqueous</p>	[1]
3.	<p>In the given experiment, the crystals will change its colour from</p> <p>(a) blue to white due to loss of 10 molecules of water. (b) Green to white due to loss of 7 molecules of water. (c) blue to white due to loss of 2 molecules of water. (d) blue to white due to loss of 5 molecules of water</p>	[1]
		

4. Kalpana has aqueous solutions of three salts, Sodium carbonate, Ammonium sulphate in three test tubes. The test tubes are not labelled. On checking, she finds the pH of the solutions to be 4.5, 7.0 and 8.9. Which of the following correctly matches the salts with their respective pH?

	pH 4.5	pH 7	pH 8.9
A	Sodium carbonate	Ammonium carbonate	Ammonium sulphate
B	Ammonium carbonate	Sodium carbonate	Ammonium sulphate
C	Ammonium sulphate	Ammonium carbonate	Sodium carbonate
D	Ammonium sulphate	Sodium carbonate	Ammonium carbonate

- (a) A (b) B (c) C (d) D

5. An element X (atomic number 12) reacts with another element Y (atomic number 8) to form a compound Z. Which of the following statements are true regarding this compound?

- (i) Molecular formula of Z is XY.
 (ii) It is soluble in water.
 (iii) X and Y are joined by sharing of electrons.
 (iv) It would conduct electricity in the molten state.

- (a) (ii) and (iii) (b) (i) and (iii)
 (c) (i), (ii) and (iv) (d) (i) and (iv)

6. The oxides of which of the following metals will react with both acidic and basic solution? [1]

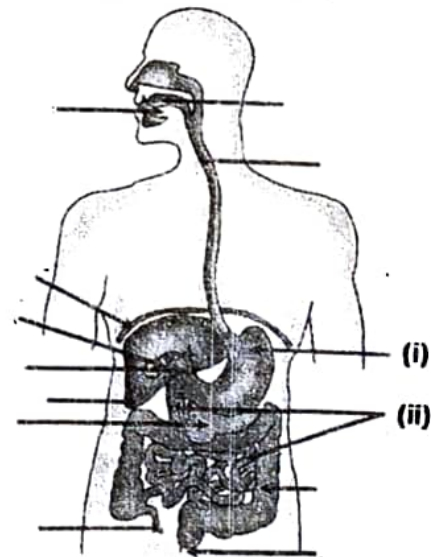
- (i) Zn (ii) Cu (iii) Al (iv) Fe
 (a) (ii) and (iii) (b) (ii) and (iv) (c) (i) and (iii) (d) (ii) only

7. Solder, an alloy of lead and tin (Pb and Sn), is used for welding electrical wires together. This is because- [1]

- (a) It has high melting point. (b) It has low melting point.
 (c) It has high boiling point. (d) It has low boiling point.

8. Observe the given figure. Identify the option that indicates the correct enzyme that is secreted in location (i) & (ii). [1]

- (a) (i)- Pepsin, (ii)- Trypsin
 (b) (i)-Trypsin, (ii)- Pepsin
 (c) (i)-Amylase, (ii)-Pepsin
 (d) (i)- Bile juice, (ii)-Trypsin



9. Leaves of 'sensitive plant' get folded on touch. Which of the following observations is INCORRECT with respect to the given movement- [1]

- (a) It is non- directional growth independent movement.
 (b) It is directional, growth dependent movement.
 (c) Leaves get folded on touch because plant cells change their shape by changing the amount of water in them.
 (d) Both (a) and (c)

10. Select the multicellular organism which reproduces by budding and also has the regeneration ability- [1]

(a) Rhizopus (b) Hydra (c) Spirogyra (d) Planaria

11.	An experiment consisted of crossing pure tall pea plant (TT) to pure dwarf pea plant (tt) and F1 progeny was obtained. Later the F1 progeny was self-pollinated to obtain F2 progeny. Identify the correct genotype and percentage of dwarf pea plants in F2 generation- (a) TT, 75% (b) Tt, 50% (c) tt, 25% (d) tt, 75%	[1]
12.	The end products of fermentation of glucose by yeast are- (a) Ethanol, CO ₂ & energy (b) CO ₂ , water & energy (c) lactic acid, CO ₂ & energy (d) Ethanol, Lactic acid & energy	[1]
13.	In order to obtain a magnification of - 0.6 with a concave mirror, the object must be placed- (a) at the focus (b) between pole and focus (c) between focus and centre of curvature (d) beyond the centre of curvature	[1]
14.	The human eye forms the image of an object at its (a) cornea (b) pupil (c) iris (d) retina	[1]
15.	Order of energy flow in ecosystem is- (a) Sunlight → herbivores → producers → carnivores (b) Sunlight → producers → carnivores → herbivores (c) Sunlight → herbivores → carnivores → producers (d) Sunlight → producers → herbivores → carnivores	[1]
16.	The percentage of solar radiation absorbed by green plants in a terrestrial ecosystem for photosynthesis is about _____ (a) 1% (b) 5% (c) 8% (d) 10%	[1]
<p>Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion (A) and Reason (R). Answer these questions 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</p>		
17.	Assertion(A): A white washed wall develops a coating of calcium carbonate after a few days Reason(R): Calcium oxide on the wall reacts slowly with carbon dioxide in the air	[1]
18.	Assertion(A): Syphilis is a sexually transmitted disease. Reason (R) : Syphilis is caused by virus.	[1]
19.	Assertion(A): The strength of the magnetic field produced at the centre of a current carrying circular coil increases on increasing the radius of the circular coil. Reason (R) : Magnetic field strength is inversely proportional to the radius of the circular coil.	[1]
20.	Assertion(A): Ozone layer depletion in the upper atmosphere is a cause of concern. Reason(R) : Ozone is very poisonous at the ground/lower level of atmosphere.	[1]
<p>SECTION-B Q. no. 21 to 26 are very short answer questions.</p>		
21.	A metal 'X' combines with a non-metal 'Y' by the transfer of electrons to form a compound Z. (i) State the type of bond in compound Z. (ii) What is the physical state of compound Z? (iii) Show the formation of Na ₂ O.	[2]
22.	(a) Reema visited a health center to know about various contraceptive methods. How do oral contraceptive pills help in contraception? (b) Name the part of Bryophyllum where buds are produced for vegetative propagation. Give one advantage of vegetative propagation in plants.	[2]

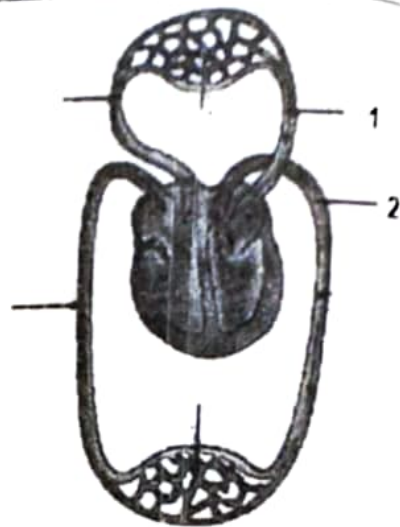
23. Observe the given figure.

- (a) Label the blood vessels 1 and 2.
(b) (i) Name the chamber of heart that pumps blood to the blood vessel 2.
(ii) Why is the blood vessel 1 considered as exceptional?

OR

Answer the following questions-

- (a) How is lymph formed?
(b) What is the first step in the breakdown of glucose during aerobic and anaerobic respiration? Where does it take place?



24. Light travels more quickly through water than through glass -

- (a) Which is optically denser: water or glass?
(b) If a ray of light passes from glass into water, which way will it bend: towards the normal or away from the normal?
(c) Light enters from air into glass plate having refractive index 1.5. What is the speed of light in glass? (The speed of light in vacuum is 3×10^8 m/s)

[2]

25. Draw the pattern of magnetic field lines around current carrying solenoid. How does this field be affected if we put soft iron core inside the coil of solenoid?

OR

Write short note on-

- (a) earthing (b) short-circuiting

[2]

26. In case of contamination of pond water with pesticides, which of the given organisms **small fish, aquatic insects, aquatic plants, big fish** living in the pond will contain maximum amount of pesticides? Give reason for your answer. Also give the term for the above phenomenon.

[2]

SECTION-C

Q.no. 27 to 33 are short answer questions.

27. (a) A compound 'X' is used for making crispy pakoras, in fire extinguishers and as an antacid. What is the chemical name of the compound 'X' and give chemical equation for its preparation? Also write the balanced chemical equation for the action of heat on this compound 'X'
(b) Name the substance which on treatment with chlorine yields bleaching powder.

[3]

28. (a) What is cinnabar? How is metal extracted from cinnabar ore? Give chemical equations.
(b) Name the method which is used to remove impurities from impure copper metal.

[3]

OR

- (a) What is the difference between calcination and roasting?
(b) Write the reactions involved when Zinc metal is extracted from Zinc sulphide ore.

29. (a) Differentiate between reflex action and involuntary action. (two points)
(b) Which hormone regulates the metabolism of carbohydrates, fats and proteins in our body? Also name the gland that secretes this hormone.

[3]

30. (a) How many pair/pairs of sex chromosomes are present in non-reproductive cells of human beings? Which of the parent (male/female) has perfect pair/pairs of sex chromosomes?
(b) "The sex of the child is a matter of chance and none of the parents are considered to be responsible for it". Justify it with the help of flow chart.

[3]

31. (a) What is hypermetropia and how is it corrected?
(b) How does an eye manage to see objects in dim light and bright light?

[3]

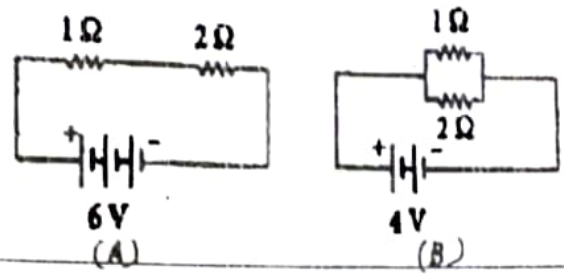
[2]

2. To demonstrate dependence of resistance on length, cross-sectional area and material of a conductor a student performed activity by using nichrome wire of length L and area of cross section A . How would the reading of ammeter gets affected if:
 (a) the length of wire is doubled keeping the thickness same?
 (b) thickness of the wire is reduced to half keeping the length same?
 (c) nichrome wire is replaced with copper wire of same length and thickness?

[3]

33. (a) State Joule's law of heating.
 (b) Compare the power used in $2\ \Omega$ resistor in each of the following circuits.

[3]



SECTION-D

Q.no. 34 to 36 are long answer questions.

34. (a) Why does carbon form large number of compounds?
 (b) Give one point of difference between saturated and unsaturated hydrocarbons.
 (c) Draw any two isomers of butane.
 (d) Identify the functional group and write the names of the following compound:
 (i) $\text{CH}_3\text{CH}_2\text{Br}$ (ii) $\text{CH}_3\text{CH}_2\text{CH}_2\text{OH}$

[5]

OR

- (a) State the reason why carbon can neither lose nor gain four electrons? How does carbon overcome this problem?
- (b) How will you differentiate chemically between butter and cooking oil?
- (c) Unsaturated hydrocarbon undergoes addition reaction. Justify by giving any one chemical equation.
- (d) Write the molecular formula and draw the electron dot structure of the cyclopentane.
- (e) Why carbon compounds are exceptionally stable?

35. (a) Draw a neat diagram of human female reproductive system. Label the following parts-
 (i) Ovary (ii) Oviduct
 (b) Write one function of
 (i) Ovaries (ii) Oviduct
 (c) Name two glands located along the path of vas deferens and give their functions.

[5]

OR

Answer the following questions-

- (a) Differentiate between nervous and hormonal system of control and coordination in human beings. (2 points)
- (b) What happens at synapse between two neurons?
- (c) Name the hormone that brings dramatic changes in the appearance of males at the time of puberty. Also name the gland which secretes this hormone.

36. Analyse the observation table for convex lens and answer the following questions:

[5]

- (a) What is the focal length of the convex lens?
- (b) Which observation is wrong and why?
- (c) Draw the ray diagram for fourth case and also find the magnification.
- (d) Identify the position of the object from the given cases, in which convex lens can be used for producing equal size image?

S.No.	Object Distance (u)	Image Distance (v)
a)	-100 cm	+25 cm
b)	-60 cm	+30 cm
c)	-40 cm	+40 cm
d)	-30 cm	+ 60 cm
e)	-25 cm	+ 100 cm
f)	-15 cm	+120 cm

OR

- (a) List two possible ways in which a concave mirror can produce a magnified image of an object placed in front of it.
- (b) Draw ray diagram for showing image formation in both the cases.
- (c) State the difference between the nature of these two images.

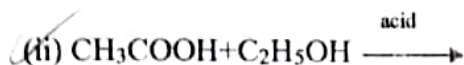
SECTION-E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37. On dropping a small piece of sodium in a test tube containing carbon compound 'X' with molecular formula C_2H_6O , bubbles of colourless gas 'Y' is produced which burns with a pop sound. [4]

(a) Identify 'X' and 'Y'. Also write the chemical equation for the reaction involved.

(b) Complete the following equations:-



OR

- (b)
- (i) Which of the two is better for washing clothes when water is hard: soap or detergent? Give reason for your answer.
- (ii) Show covalent bonding in O_2 and CH_4 .

38. Sunil and Sunita both have black eyes. They have 4 children. Out of these, 3 children have black eyes while 1 child has blue eyes. [4]

(a) Which trait (black or blue eye colour) is controlled by the recessive allele? Give reason.

(b) Give the possible genotypes of Sunil and Sunita.

(c) (i) Show the inheritance of eye colour in the offsprings of Sunil and Sunita with the help of a suitable cross.

(ii) What is the probability that the offsprings of Sunil & Sunita will have black eyes?

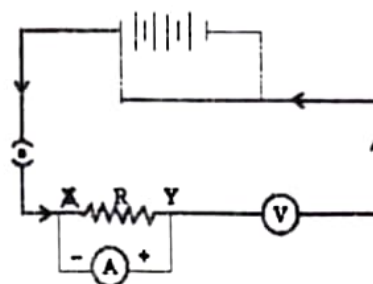
OR

(c) Pea plant having round and yellow seeds ($RRYY$) is crossed with Pea plant having wrinkled and green seeds ($rryy$). F1 progeny obtained was self-pollinated to obtain F2 progeny.

(i) Why is the given cross called as dihybrid cross?

(ii) What will be the phenotype and the genotype of F1 progeny in the above cross?

39. According to Ohm's law, the current passing through a conductor is proportional to the potential difference applied between its ends provided the temperature remains constant i.e. $I \propto V$. To verify this law a student has made following circuit, but his teacher told him that there are few mistakes in the circuit. [4]



(a) Should the resistance of an ammeter be low or high?

(b) What will happen to the resistance of wire 'XY', if it is replaced with a wire of double length and double area of cross section?

(c) Identify any two mistakes in the circuit.

OR

(c) How can 3Ω , 6Ω and 9Ω be connected to give an equivalent resistance of 4.5Ω ?