

General Instructions:

- (i) The question paper comprises five sections, A, B, C, D and E. You are to attempt all the sections.
- (ii) All questions are compulsory.
- (iii) Internal choice is given in sections B, C, D and E.
- (iv) Question numbers 1 and 2 in Section-A are one mark questions. They are to be answered in one word or in one sentence.
- (v) Question numbers 3 to 5 in Section B are two-marks questions. These are to be answered in about 30 words each.
- (vi) Question numbers 6 to 15 in Section C are three-marks questions. These are to be answered in about 50 words each.
- (vii) Question numbers 16 to 21 in Section D are five-marks questions. These are to be answered in about 70 words each.
- (viii) Question numbers 22 to 27 in Section E are based on practical skills. Each question is a two marks question. These are to be answered in brief.

SECTION-A

- 1. What is the function of a galvanometer in a circuit?
- 2. Why is biogas considered an excellent fuel ?

SECTION-B

- 3. How it can be proved that the basic structure of the Modern Periodic Table is based on the electronic configuration of atoms of different elements?

OR

The electronic configuration of an element is 2, 8, 4. State its:

- (a) group and period in the Modern Periodic Table.
- (b) name and write its one physical property.
- 4. Write two different ways in which glucose is oxidized to provide energy in human body. Write the products formed in each case.
- 5. Define the term power of accommodation. Write the modification in the curvature of the eye lens which enables us to see the nearby objects clearly?

SECTION-C

- 6. 2g of silver chloride is taken in a china dish and the china dish is placed in sunlight for sometime. What will be your observation in this case ? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction.

OR

Identify the type of reactions taking place in each of the following cases and write the balanced chemical equation for the reactions.

- (a) Zinc reacts with silver nitrate to produce zinc nitrate and silver.
- (b) Potassium iodide reacts with lead nitrate to produce potassium nitrate and lead iodide
- 7. Identify the acid and the base from which sodium chloride is obtained. Which type of salt is it? When is it called rock salt? How is rock salt formed?
- 8. Based on the group valency of elements write the molecular formula of the following compounds giving justification for each:
 - (i) Oxide of first group elements.
 - (ii) Halide of the elements of group thirteen, and
 - (iii) Compound formed when an element, A of group 2 combines with an element, B of group seventeen.
- 9. Write three types of blood vessels. Give one important feature of each.
- 10. Trace the sequence of events which occur when a bright light is focused on your eyes.
- 11. What are plant hormones? Name the plant hormones responsible for the following:
 - (i) Growth of stem
 - (ii) Promotion of cell division
 - (iii) Inhibition of growth
 - (iv) Elongation of cells

12. Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in F_1 and F_2 generations when he crossed the tall and short plants? Write the ratio he obtained in F_2 generation plants.

OR

List two differences between acquired traits and inherited traits by giving an example of each.

13. What is a rainbow? Draw a labelled diagram to show the formation of a rainbow.
14. How can we help in reducing the problem of waste disposal ? Suggest any three methods.

OR

Define an ecosystem. Draw a block diagram to show the flow of energy in an ecosystem.

15. What is water harvesting? List two main advantages associated with water harvesting at the community level. Write two causes for the failure of sustained availability of groundwater.

SECTION-D

16. (a) List in tabular form three chemical properties on the basis of which we can differentiate between a metal and a non-metal.

(b) Give reasons for the following:

- (i) Most metals conduct electricity well.
(ii) The reaction of iron (III) oxide $[Fe_2O_3]$ with heated aluminium is used to join cracked machine parts.

17. Write the chemical formula and name of the compound which is the active ingredient of all alcoholic drinks. List its two uses. Write chemical equation and name of the product formed when this compound reacts with -

- (i) sodium metal
(ii) hot concentrated sulphuric acid

OR

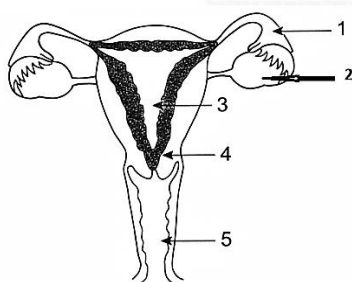
What is methane? Draw its electron dot structure. Name the type of bonds formed in this compound. Why are such compounds:

- (i) poor conductors of electricity ? and
(ii) have low melting and boiling points? What happens when this compound burns in oxygen?

18. Define pollination. Explain the different types of pollination. List two agents of pollination? How does suitable pollination lead to fertilization?

OR

- (a) Identify the given diagram. Name the parts 1 to 5.



- (b) What is contraception? List three advantages of adopting contraceptive measures.

19. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.

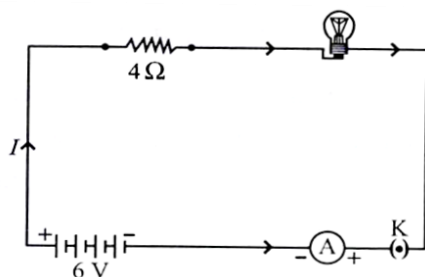
- (i) Use lens formula to find the distance of the image from the lens.
(ii) List four characteristics of the image (nature, position, size, erect/inverted) formed by the lens in this case.
(iii) Draw ray diagram to justify your answer of part (ii).

20. (a) With the help of a suitable circuit diagram prove that the reciprocal of the equivalent resistance of a group of resistances joined in parallel is equal to the sum of the reciprocals of the individual resistances.

- (b) In an electric circuit two resistors of 12Ω each are joined in parallel to a 6V battery. Find the current drawn from the battery.

OR

An electric lamp of resistance 20Ω and a conductor of resistance 4Ω are connected to a 6V battery as shown in the circuit. Calculate:



- the total resistance of the circuit,
- the current through the circuit,
- the potential difference across the (i) electric lamp and (ii) conductor, and
- power of the lamp.

21. What is a solenoid ? Draw the pattern of magnetic field lines of (i) a current carrying solenoid and (ii) a bar magnet. List two distinguishing features between the two fields.

SECTION-E

22. Blue litmus solution is added to two test tubes A and B containing dilute HCl and NaOH solution respectively. In which test tube a colour change will be observed? State the colour change and give its reason.

OR

What is observed when 2 mL of dilute hydrochloric acid is added to 1g of sodium carbonate taken in a clean and dry test tube? Write chemical equation for the reaction involved.

23. In three test tubes A, B, and C, three different liquids namely, distilled water, underground water and distilled water in which a pinch of calcium sulphate is dissolved, respectively are taken. Equal amount of soap solution is added to each test tube and the contents are shaken. In which test tube will the length of the foam (lather) be longest? Justify your answer.
24. A student is observing the temporary mount of a leaf peel under a microscope. Draw labelled diagram of the structure of stomata as seen under the microscope.

OR

Draw a labelled diagram in proper sequence to show budding in hydra.

25. "In the experimental set up to show that "CO₂ is given out during respiration", name the substance taken in the small test tube kept in the conical flask. State its function and the consequence of its use.
26. While studying the dependence of potential difference (V) across a resistor on the current (I) passing through it, in order to determine the resistance of the resistor, a student took 5 readings for different values of current and plotted a graph between V and I . He got a straight line graph passing through the origin. What does the straight line signify? Write the method of determining resistance of the resistor using this graph.

OR

What would you suggest to a student if while performing an experiment he finds that the pointer/needle of the ammeter and voltmeter do not coincide with the zero marks on the scales when circuit is open? No extra ammeter/voltmeter is available in the laboratory.

27. List four precautions which a student should observe while determining the focal length of a given convex lens by obtaining image of a distant object on a screen.