

**CBSE EXAMINATION PAPER—2019 (Delhi)**  
**SCIENCE**

*Time : 3 hrs.*

*Max. Marks : 80*

**GENERAL INSTRUCTIONS:**

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

**Set-I**

**SECTION A**

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

**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? **(2)**

**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 in human body. Write the products formed in each case. **(2)**
- 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? **(2)**

### SECTION C

6. 2 g 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. (3)

**Or**

Identify the type of reaction 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? (3)
8. Based on the group valency of elements write the molecular formula of the following compounds giving justification for each: (3)
- (i) Oxide of first group elements.
- (ii) Halide of the elements of group thirteen, and
- (iii) Compound formed when an element, A or group 2 combines with an element, B of group seventeen.
9. Write three types of blood vessels. Give one important feature of each. (3)
10. Trace the sequence of events which occur when a bright light is focused on your eyes. (3)
11. What are plant hormones? Name the plant hormones responsible for the following: (3)
- (a) Growth of stem
- (b) Promotion of cell division
- (c) Inhibition of growth
- (d) 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. (3)

**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. (3)
14. How can we help in reducing the problem of waste disposal? Suggest any three methods. (3)

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. (3)

### SECTION D

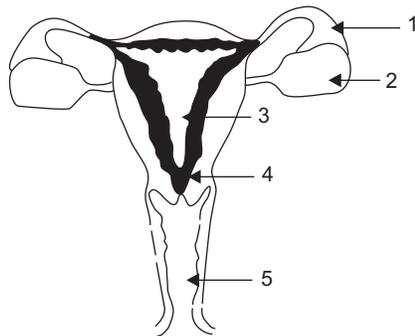
16. (a) List in tabular form three chemical properties on the basis of which we can differentiate between a metal and a non metal. (5)
- (b) Give reasons for the following:
- (i) Most metals conduct electricity well.
  - (ii) The reaction of iron
  - (iii) Oxide  $[\text{Fe}_2\text{O}_3]$  with heated 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— (5)
- (a) sodium metal
  - (b) 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:

- (a) poor conductors of electricity? and
- (b) 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? (5)



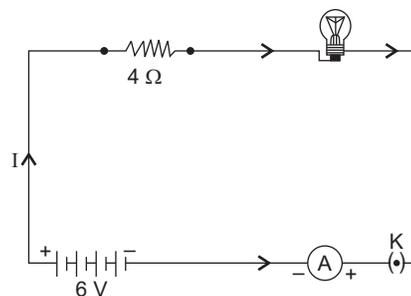
Or

- (a) Identify the given diagram. Name the parts 1 to 5.
  - (b) What is contraception? List three advantages of adopting contraceptive measure.
19. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm. (5)
- (a) Use lens formula to find the distance of the image from the lens.
  - (b) List four characteristics of the image (nature, position, size, erect/inverted) formed by the lens in this case.
  - (c) 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 of a group of resistances joined in parallel is equal to the sum of the reciprocal of the individual resistances. (5)
- (b) In an electric circuit two resistors of  $12\ \Omega$  each are joined in parallel to a 6 V battery. Find the current drawn from the battery. (5)

**Or**

An electric lamp of resistance  $20\ \Omega$  and a conductor of resistance  $4\ \Omega$  are connected to a  $6\ \text{V}$  battery as shown in the circuit. Calculate:

- (a) the total resistance of the circuit,
- (b) the current through the circuit,
- (c) The potential difference across the (i) electric lamp and (ii) conductor, and
- (d) 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. (5)

### SECTION E

22. Blue litmus solution is added to 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 will be observed? State the colour change and give its reason. (2)

**Or**

What is observed when  $2\ \text{mL}$  of dilute hydrochloric acid is added to  $1\ \text{g}$  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. (2)
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. (2)

**Or**

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

25. In the experimental set up to show that " $\text{CO}_2$  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. (2)
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. (2)

**Or**

What would you suggest to a student if while performing an experiment he finds that the pointer/needle of the 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. (2)

## Set-II

### SECTION A

Questions different from Set I.

1. Name and define the SI unit of current. (1)
2. Write the name of the main constituent of biogas. Also state its percentage. (1)

### SECTION B

3. Write the name, symbol and electronic configuration of an element X whose atomic number is 11. (2)

Or

Can the following groups of elements be classified as Dobereiner's triad:

(a) Na, Si, Cl (b) Be, Mg, Ca

Atomic mass of Be-9; Na-23, Mg-24, Si-28, Cl-35, Ca-40.

Justify your answer in each case.

4. How is  $O_2$  and  $CO_2$  transported in human beings? (2)
5. Write the structure of eye lens and state the role of ciliary muscles in the human eye. (2)

### SECTION C

9. Define the term transpiration. Design an experiment to demonstrate this process. (3)
10. What is feedback mechanism of hormonal regulation. Take the example of insulin to explain this phenomenon. (3)
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. (3)

Or

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

### SECTION D

17. Write chemical equations for the following reactions: (5)
  - (i) Calcium metal reacts with water.
  - (ii) Cinnabar is heated in the presence of air.
  - (iii) Manganese dioxide is heated with aluminium powder
- (b) What are alloys? List two properties of alloys.

## Set-III

### SECTION A

Questions different from Set I and Set II.

1. If you could use any source of energy for heating your food which one would you prefer? State one reason for your choice. (1)
2. Write the function of voltmeter in an electric circuit. (1)

### SECTION B

3. What happens to the image distance in the normal human eye when we decrease the distance of an object, say 10 m to 1 m? Justify your answer. (2)
4. List two different functions performed by pancreas in our body. (2)
7. List three advantages each of: (3)
- (i) exploiting resources with short term aims, and
  - (ii) using a long term perspective in managing our natural resources.

### SECTION C

9. Nervous and hormonal systems together perform the function of control and coordination in human beings. Justify this statement with help of an example. (3)
11. What is photosynthesis? Explain its mechanism. (3)
15. Explain the following: (3)
- (a) Sodium chloride is an ionic compound which does not conduct electricity in molten state as well as in aqueous solution.
  - (b) Reactivity of aluminium decrease if it is dipped in nitric acid.
  - (c) Metals like calcium and magnesium are never found in their free state in nature.

### SECTION D

17. (a) Draw magnetic field lines produced around a current carrying straight conductor passing through a cardboard. Name, state and apply the rule to mark the direction of these field lines.
- (b) How will the strength of the magnetic field change when the point where magnetic field is to be determined is moved away from the straight wire carrying constant current? Justify your answer. (5)
21. Write the main difference between an acid and a base. With the help of suitable examples explain the term neutralization and the formation of— (5)
- (i) acidic,
  - (ii) basic and
  - (iii) neutral salts.