

SAMPLE PAPER – 5

CBSE BOARD

CLASS - X

SCIENCE

Time : 3 Hours

Max. Marks : 80

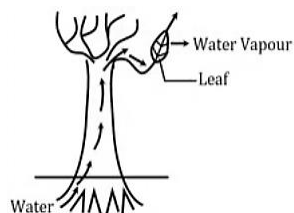
General Instructions:

- (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 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

1. When Ag is exposed to air it gets a black coating of
(A) AgNO_3 (B) Ag_2S (C) Ag_2O (D) Ag_2CO_3
2. Which of the reactions is used in black and white photography?
(A) Combination Reaction (B) Decomposition Reaction
(C) Displacement reaction (D) Oxidation reaction
3. The colour of phenolphthalein in acidic medium is-
(A) Yellow (B) Pink (C) Colourless (D) Blue
4. Sodium carbonate is a basic salt because it is a salt of a
(A) strong acid and strong base (B) weak acid and weak base
(C) strong acid and weak base (D) weak acid and strong base
5. The nature of copper oxide is
(A) acidic (B) basic (C) neutral (D) amphoteric
6. Generally, when certain metals react with an acid they release gas.
(A) Nitrogen (B) Oxygen (C) Hydrogen (D) Argon
7. The hetero atoms present in $\text{CH}_3\text{-CH}_2\text{-O-CH}_2\text{-CH}_2\text{-Cl}$ are
(i) oxygen (ii) carbon (iii) hydrogen (iv) chlorine
(A) (i) and (ii) (B) (ii) and (iii) (C) (iii) and (iv) (D) (i) and (iv)

8. Observe the following diagram and identify the process and its significance from the following options :



- (A) Evaporation : maintains water contents in leaf cells.
 (B) Transpiration : creates a suction force which pulls water inside the plant.
 (C) Excretion : helps in excreting out waste water from the plant.
 (D) Translocation : helps in transporting materials from one cell to another.
9. Opening and closing of stomata is due to:
 (A) High pressure of gases inside the cells.
 (B) Movement of water in and out of the guard cells.
 (C) Stimulus of light in the guard cells.
 (D) Diffusion of CO_2 in and out of the guard cells.
10. A cross between pea plant with white flowers (vv) and pea plant with violet flowers (VV) resulted in F_2 progeny in which ratio of violet (VV) and white (vv) flowers will be:
 (A) 1:1 (B) 2:1 (C) 3:1 (D) 1:3
11. In plants the role of cytokinin is :
 (A) Promote cell division (B) Wilting of leaves
 (C) Promote the opening of stomatal pore (D) Help in the growth of stem
12. The number of chromosomes in parents and offspring's of a particular species undergoing sexual reproduction remain constant due to :
 (A) doubling of chromosomes after zygote formation.
 (B) halving of chromosomes after zygote formation.
 (C) doubling of chromosomes before gamete formation.
 (D) halving of chromosomes at the time of gamete formation.
13. To obtain a magnification of +2 with a concave mirror of radius of curvature 60 cm, the object distance must be.
 (A) -90 cm (B) -45 cm (C) -30 cm (D) -15 cm
14. The change in the focal length of an eye lens in human beings is caused by action of:
 (A) Optic nerves (B) Ciliary muscles (C) retina (D) cornea
15. What prevents backflow of blood inside the heart during contraction ?
 (A) Valves in heart (B) Thick muscular walls of ventricles
 (C) Thin walls of atria (D) All of these
16. In humans the life processes are controlled and regulated by:
 (A) Reproductive and endocrine system (B) Respiratory and nervous system
 (C) Endocrine and Digestive system (D) Nervous and Endocrine system

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

17. Assertion (A) : The functional group present in alcohols is – OH.

Reason (R) : It is the same group as present in water, hence water and alcohol have similar properties.

18. Assertion (A) : In humans, if gene (B) is responsible for black eyes and gene (b) is responsible for brown eyes, then the colour of eyes of the progeny having gene combination Bb or BB will be black only.

Reason (R) : The black colour of the eyes is a dominant trait.

19. Assertion (A) : The energy which passes to the herbivores does not come back to autotrophs.

Reason (R) : The flow of energy in a food chain is unidirectional.

20. Assertion (A): Concave mirrors are used in rear view mirrors.

Reason (R): In practice, concave mirrors give parallel rays of light from a source placed at its focus.

SECTION – B

21. The pH of an aqueous solution decreases from 3 to 2. What will happen to the nature of the Solution ?

22. (A) Name the part of brain which is responsible for the following actions :

- (i) Maintaining posture and balance
- (ii) Beating of heart
- (iii) Thinking
- (iv) Blood pressure

OR

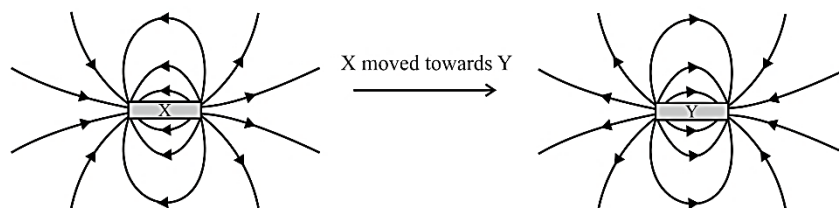
(B) Where are auxins synthesized in a plant ? Which organ of the plant shows :

- (i) Positive phototropism
- (ii) Negative geotropism
- (iii) Positive hydrotropism

23. Write one specific function each of the following organs in relation with excretion in human beings :

- (i) Renal Artery
- (ii) Urethra
- (iii) Glomerulus
- (iv) Tubular part of nephron

24. Two green plants are kept separately in oxygen free containers, one in the dark and other in sunlight. It was observed that plant kept in dark could not survive longer. Give reason for this observation.
25. The figure shows two magnets X and Y kept near each other. Their poles are not marked, but the magnetic field lines are shown in the figure.



If magnet X is moved towards magnet Y as indicated by the arrow, will the two magnets attract or repel each other? Justify your answer by describing how you interpret the field lines.

OR

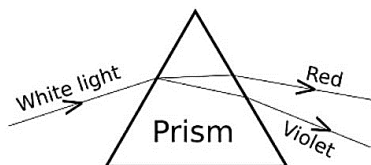
What are the three types of wires used in household circuit? Pick out the wire used as a safety measure for an electrical appliance with the metallic body.

26. Use of several pesticides which results in excessive accumulation of pesticides in river or ponds, is a matter of deep concern. Justify this statement.

SECTION – C

27. Aluminium is a reactive metal but is still used for packing food articles. Give reason.
28. With the help of an example explain what happens when a base reacts with a non-metallic oxide. What do you infer about the nature of non-metal Oxide?
29. **(A) (i)** How does Paramecium obtain its food?
(ii) List the role of each of the following in our digestive system :
 (a) Hydrochloric acid (b) Trypsin
 (c) Muscular walls of stomach (d) Salivary amylase
- OR**
- (B) (i)** What is double circulation?
(ii) Why is the separation of the right side and the left side of the heart useful? How does it help birds and mammals?
30. Write one difference between biodegradable and non-biodegradable wastes. List two impacts of each type of the accumulated waste on environment if not disposed off properly.
31. An electric motor rated 1100 W is connected to 220 V mains. Find:
 (i) The current drawn from the mains.
 (ii) Electric energy consumed if the motor is used for 5 hours daily for 6 days.
 (iii) Total cost of energy consumed if the rate of one unit is Rs 5.

32. A student observes the above phenomenon in the lab as a white light passes through a prism. Among many other colours, he observed the position of the two colours : Red and Violet.



- (i) What is the phenomenon called ?
 (ii) What is the reason for the violet light to bend more than the red light ?
 (iii) Draw a ray diagram to show the path of light when two identical glass prisms are arranged together in an inverted position with respect to each other and a narrow beam of white light is allowed to fall obliquely on one of the focus of the first prism.
33. (i) What is the heating effect of electric current ?
 (ii) Write an expression for the amount of heat produced in a resistor when an electric current is passed through it stating the meanings of the symbols used.
 (iii) Name two appliances based on the heating effect of electric current.

SECTION – D

34. Explain the following:
 (i) Reactivity of Al decreases if it is dipped in conc. HNO_3
 (ii) NaCl is not a conductor of electricity in solid state whereas it does conduct electricity in aqueous solution as in molten state.
35. (i) Name and explain the two modes of asexual reproduction observed in hydra.
 (ii) What is vegetative propagation ? List two advantages of using this technique.
36. (A) (i) What is meant by resistance of a conductor ? Define its SI unit.
 (ii) List two factors on which the resistance of a rectangular conductor depends.
 (iii) How will the resistance of a wire be affected if its.
 (a) length is doubled, and
 (b) radius is also doubled ?
 Give justification for your answer.

OR

- (B) In an electric three bulbs of 100 W each are connected in series to a source. In another circuit set of three bulbs of the same wattage are connected in parallel to the same source.
 (i) Will the bulb in the two circuits glow with the same brightness ? Justify your answer.
 (ii) Now, let one bulb in both circuits get fused. Will the rest of the bulbs continue to glow in each circuit ? Give reason for your answer.

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. Alloying is a very good method of improving the properties of a metal. This gives the desired properties of the metal. For example, iron is the most widely used metal. But it is never used in its pure state. This is because pure iron is very soft and stretches easily when hot. But, if it is mixed with a small amount of carbon (about 0.05%), it becomes hard and strong. When iron is

mixed with nickel and chromium, we get stainless steel, which is hard and does not rust. Thus, if iron is mixed with some other substance, its properties change. In fact, the properties of any metal can be changed, if it is mixed with some other substance. The substance added may be a metal or a non-metal.

- (i) Which among the following alloys contain non-metal as one of its constituents?
 (A) Brass (B) Bronze (C) Amalgam (D) Steel
- (ii) An alloy can be one of the following types:
 (A) Homogenous (B) Heterogeneous
 (C) Intermetallic (D) All of the above
- (iii) By adding silicon to stainless steel which of the following property is enhanced?
 (A) Resistance to corrosion (B) Electrical characteristics
 (C) Ductility (D) Magnetic property
- (iv) Which of the following alloy(s) contain mercury as one of its constituents?
 (A) Zinc amalgam (B) Alnico (C) Solder (D) Bronze

38. The most obvious outcomes of the reproductive process is the generation of individuals of similar design, but in sexual reproduction they may not be exactly alike. The resemblances as well as differences are marked. The rules of heredity determine the process by which traits and characteristic are reliably inherited. Many experiments have been done to study the rules of inheritance.

- (i) Why an offspring of human being is not a true copy of his parents in sexual reproduction ?
 (ii) While performing experiments on inheritance in plants, what is the difference between F_1 and F_2 generation ?
 (iii) (A) Why do we say that variations are useful for the survival of a species over time ?

OR

(iii) (B) Study Mendel's cross between two plants with a pair of contrasting characters.

RRYY × rryy
 Round Yellow Wrinkled Green

He observed 4 types of combination in F_2 generation. Which of these were new combination ? Why do new features which are not present in the parents, appear in F_2 generation ?

39. Student took three concave mirrors of different focal lengths and formed the experiment to see the image formation by placing an object different distances with these mirror as shown in the following table.

Case No.	Object-distance	Focal length
I.	45 cm	20 cm
II.	30 cm	15 cm
III.	20 cm	30 cm

Now answer the following questions :

- (a) List two properties of the image formed in Case I.
 (b) In which one of the cases given in the table the mirror will form real image of same size and why ?
 (c) Name the type of mirror used by dentists. Give reason why do they use such type of mirrors.

OR

(c) Look at the table and identify the situation (object distance and focal length) which resembles the situation in which concave mirror are used as shaving mirrors ? Draw a ray diagram to show the image formation in this case.