

SAMPLE PAPER**TIME : 3 HRS.****MAX. MARKS : 80****GENERAL INSTRUCTIONS :**

1. The question paper comprises four Sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
2. Section A: Qns. 1 to 20 all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion-reason type questions. Answers to these should be given in one word or one sentence.
3. Section B: Qns. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.
4. Section C: Qns. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.
5. Section D: Qns. 34 to 36 are long answer type question carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
6. There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions
7. Wherever necessary, neat and properly labelled diagrams should be drawn.

SECTION-A

1. Which element exhibits maximum catenation property?
2. Which group elements are called halogens?
3. Identify the type of reaction.
(i) $AB \longrightarrow A + B$ (ii) $AB + CD \longrightarrow AD + BC$

OR

Which substance is added to foods high in oil and fat to prevent rancidity?

4. Refractive index of glass with respect to air is $\frac{3}{2}$, then what would be the refractive index of air with respect to glass?
5. Why water is seen blue in colour in a deep sea?

OR

Name the phenomena behind blue appearance of the sky.

6. When an object moves closer to a concave lens, what happens to the image formed by it?

OR

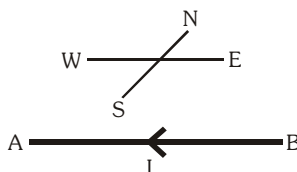
A light ray enters into a glass slab from the air. If both the angle of incidence and angle of refraction are equal, then what is the value of angle of refraction?

7. When two ends of a metallic wire are connected across the terminals of a cell, then some potential difference is set up between its ends. In which direction, electrons are flowing through the metallic wire?

OR

State the relation between potential difference, work done and charge moved.

8. A constant current I is flowing in a horizontal wire (placed in the plane of a paper) from East to West as shown in the given figure. What will be the direction of magnetic field at a point just above the wire?



9. Name the enzyme present in pancreatic juice which help in digestion of proteins.

OR

Give examples of two organisms which show holozoic mode of nutrition.

10. What do you mean by homozygous condition?
 11. Define food web.
 12. Name the valve which is present between
 (i) Left atrium and left ventricle.
 (ii) Right atrium and right ventricle.
 13. In an aquatic ecosystem, the organism present at the trophic level equivalent to cows in grasslands is
 (1) phytoplanktons (2) large fishes (3) sea gulls (4) zooplanktons

Directions : Assertion-Reason Type Questions (Q. Nos. 14-16)

In each of the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as :

- (1) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 (2) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
 (3) If Assertion is true, but Reason is false.
 (4) If Assertion is false, but Reason is true.
14. **Assertion :** When Quick lime added to water, formation of slaked lime is a combination reaction.
Reason : The reaction in which two or more substances combine to form a single new substance are called combination reaction.
15. **Assertion :** Xylem transport is unidirectional
Reason : Phloem transport is bi-directional
- OR
- Assertion :** Left atrium has the thickest muscular wall among all the chambers of heart.
Reason : Left atrium receives oxygenated blood from lungs.
16. **Assertion :** When focal length of a lens increases, then its power decreases.
Reason : Power of a lens is inversely proportional to focal length of lens.

17. Read the following passage. Answer any four questions from 17 (a) to 17 (e).

Respiration is the process by which the food taken through nutrition gets oxidised to release energy for various activities.

Process of respiration can be divided into the following two categories :

- (1) Aerobic respiration (2) Anaerobic respiration

Aerobic respiration : It is a process in which there is complete break down of food (glucose) into carbon dioxide and water in the presence of oxygen and energy is released.

Anaerobic respiration : It is partial breakdown of food (glucose) without using molecular oxygen. In this type of respiration less amount of energy is produced.

(a) Which of the following processes is responsible for cramps in the muscles of sportsman?

- (1) Non conversion of glucose to pyruvate
(2) Conversion of pyruvate to lactic acid due to deficiency of oxygen.
(3) Conversion of pyruvate to glucose in presence of oxygen
(4) Conversion of pyruvate to ethanol

(b) Yeast is used in wine and beer industries because it respire

- (1) Aerobically producing oxygen (2) Aerobically producing alcohol
(3) Anaerobically producing alcohol (4) Anaerobically producing lactic acid

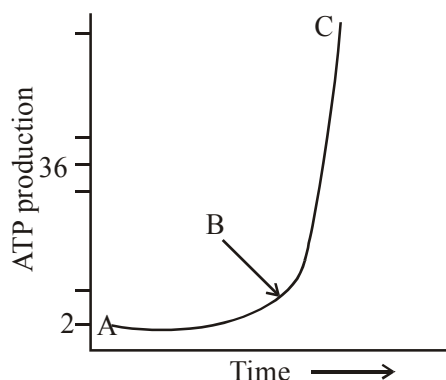
(c) Select the wrong statement with respect to glycolysis.

- (1) It occurs in the cytoplasm
(2) It is an anaerobic phase
(3) Glucose is broken down to form 2 molecules of pyruvic acid
(4) None of these

(d) A test tube containing sugar solution and yeast is kept in a warm place overnight. Few drops of oil is also put in the test tube to cut contact from external air. The gas collected from this mixture

- (1) extinguishes the flame (2) bursts into flame when ignited
(3) turns lime water milky (4) both (1) and (3)

(e) Animal cells are suspended in a culture medium that contains excess glucose. The graph shows glucose utilization under different growth conditions. (A), (B) and (C) in the graph indicate





- (1) A – Anaerobic respiration
B – Introduction of O₂ to culture medium
C – Aerobic respiration
(2) A – Aerobic respiration
B – Introduction of CO₂ to culture medium
C – Anaerobic respiration

- (3) A – Aerobic respiration
B – Supply of organic triphosphate
C – Aerobic respiration
- (4) A – Aerobic respiration
B – Introduction of CO to culture medium
C – Anaerobic respiration

18. Read the following passage. Answer any four questions from 18(a) to 18(e).

When a more reactive metal is placed in a salt solution of less reactive metal, then the more reactive metal displaces the less reactive metal from its salt solution. This reaction is also known as displacement reaction. The arrangement of metals in order of decreasing reactivities is called reactivity series or activity series of metals. After performing displacement experiments the following series has been developed.

Reactivity series of metals

 Metal more reactive than hydrogen	Potassium	K	 Most reactive metal
	Sodium	Na	
	Calcium	Ca	
	Magnesium	Mg	
	Aluminium	Al	
	Zinc	Zn	
	Iron	Fe	
	Nickel	Ni	
	Tin	Sn	
	Lead	Pb	
	Hydrogen	H	
	Copper	Cu	
	Mercury	Hg	
	Silver	Ag	
	Platinum	Pt	
	Gold	Au	

- (a) Which of the following is the correct arrangement of the given metals in order of their reactivity?
Zinc, Iron, Magnesium, Sodium
- (1) Zinc > Iron > Magnesium > Sodium
(2) Sodium > Magnesium > Iron > Zinc
(3) Sodium > Zinc > Magnesium > Iron
(4) Sodium > Magnesium > Zinc > Iron
- (b) Which of the following pairs will give displacement reactions?
- (1) FeSO₄ solution and Copper metal
(2) AgNO₃ solution and Copper metal
(3) CuSO₄ solution and Silver metal
(4) NaCl solution and Copper metal
- (c) Copper sulphate solution can be easily kept in a container made of
- (1) Lead (2) Zinc (3) Silver (4) Aluminium

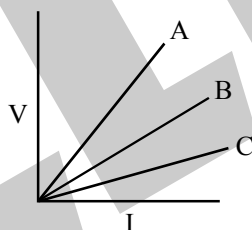
- (d) Which is correct order as per the reactivity of the metals?
 (1) $Zn > Fe > Cu > Ag$ (2) $Fe > Zn > Cu > Ag$
 (3) $Cu > Zn > Fe > Ag$ (4) $Zn > Cu > Fe > Ag$
- (e) Which of the following does not react with water?
 (1) Lithium (2) Magnesium (3) Copper (4) Calcium

19. Read the following and answer any four questions from 19(a) to 19 (e):

The resistance of a conductor depends on its dimensions like, length and area of cross-section and also on the nature of material and temperature of the conductor. On the other hand, resistivity of a conductor remains independent of its dimensions but it depends on temperature. For example, If a copper conductor is stretched along its length or it is cut, its resistance vary but resistivity remains unchanged.

- (a) A conductor A of resistance R is stretched to double its length and another conductor B of resistance 2R is cut in two equal lengths. The ratio of the resistances of the 'stretched conductor A' and 'half part of the conductor B' is
 (1) 2 : 1 (2) 1 : 1 (3) 4 : 1 (4) 8 : 1

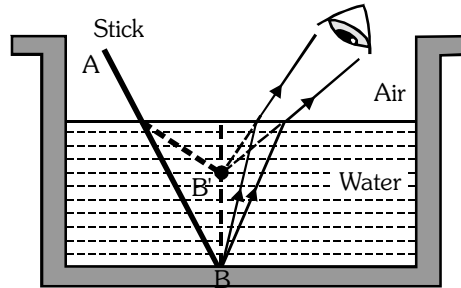
- (b) Figure shows V-I graphs for a Copper, Silver and Aluminium wire of same dimensions. Which graph provides the resistance of silver wire?



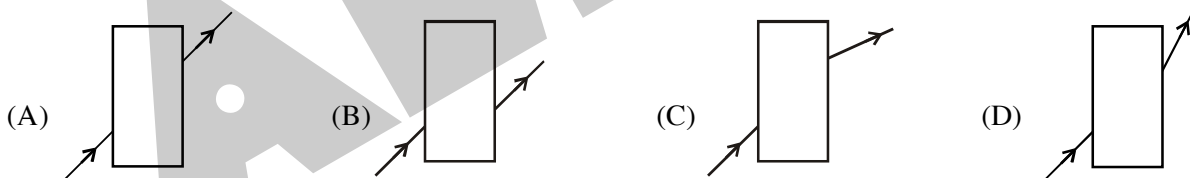
- (1) A (2) B
 (3) C (4) Cannot be predicted
- (c) Recasting of a cylindrical conductor of resistance 20Ω is done having its new radius half than the earlier and keeping its length unchanged. Then, the new resistance of the conductor will be
 (1) 80Ω (2) 10Ω (3) 20Ω (4) 5Ω
- (d) Resistance of a cylindrical conductor is
 (1) directly proportional to radius of the conductor.
 (2) inversely proportional to radius of the conductor.
 (3) directly proportional to square of length of the conductor.
 (4) inversely proportional to square of the radius of the conductor.
- (e) With increase in the temperature of the conductor, the resistance of the conductor
 (1) decreases (2) increases
 (3) remains unchanged (4) first increases, then decreases

20. Read the following and answer any four questions from 20(a) to 20 (e):

In an experiment, a stick is partly immersed in water, as shown in figure. The stick inside the water appears to be bent.



- (a) Due to which phenomenon of light the stick appears to be bent inside the water?
- (1) Reflection (2) Refraction
(3) Dispersion (4) Scattering
- (b) If the refractive index of water is $\frac{4}{3}$, what is the speed of light in water?
- (1) $0.5 \times 10^4 \text{ ms}^{-1}$ (2) $2 \times 10^4 \text{ ms}^{-1}$
(3) $3 \times 10^8 \text{ ms}^{-1}$ (4) $2.25 \times 10^8 \text{ ms}^{-1}$
- (c) Four students A, B, C and D showed the following traces of the path of a ray of light passing through a rectangular glass slab.



Which of the traces most likely to be correct?

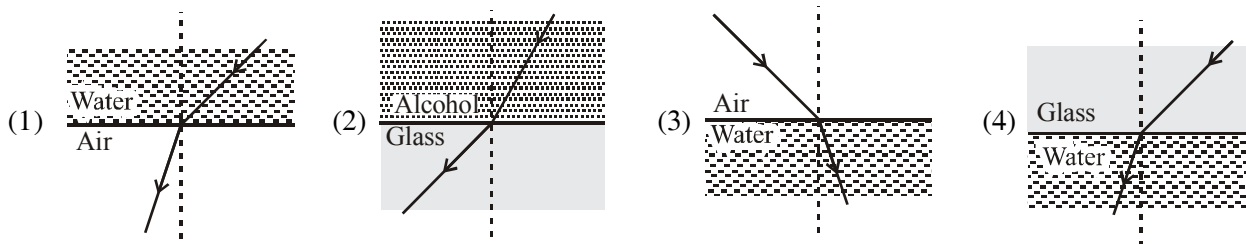
- (1) A (2) B (3) C (4) D
- (d) In an experiment to trace the path of a ray of light through a rectangular glass slab, three students Raman, Mohit and Suresh tabulated their observations as given below :

Student	Raman	Mohit	Suresh
$\angle i$	60°	60°	60°
$\angle r$	50°	40°	35°
$\angle e$	62°	56°	60°

The student who has performed the experiment with all resources and sincerity

- (1) Raman (2) Mohit
(3) Suresh (4) Both Raman and Suresh

(e) Which of the following diagrams shows the refracted ray of light correctly?



SECTION-B

21. (a) State the electron-dot structure for calcium and sulphur.
(b) Show the formation of CaS by the transfer of electrons.

OR

Solid sodium bicarbonate was placed on a strip of pH paper. What was the change in colour? What does the change in colour indicate?

22. Give the classification of covalent bond along with examples.
23. Give any two differences between asexual reproduction and sexual reproduction.

OR

What is the difference between a bisexual flower and unisexual flower. Give two examples of each.

24. Name the excretory organ and main nitrogenous waste product of following organisms.
(i) Earthworm (ii) Insects (iii) Flatworm (iv) Humans
25. An object of height 1.2 cm is placed before a concave mirror of focal length 20 cm so that a real image is formed at a distance of 60 cm from it. Find the position of the object. What will be the height of the image formed?
26. Two wires of same metal have the same length but their cross-sectional areas are in the ratio 8 : 5. The resistance of the thicker wire is 10 Ω. What is the resistance of the other wire?

OR

Draw magnetic lines of force for a current carrying solenoid. Also, explain the pole formation at this ends.

SECTION-C

27. Identify the oxidant and reductant in each of the following reactions.
(i) $\text{MnO}_2 + 4\text{HCl} \longrightarrow \text{MnCl}_2 + \text{Cl}_2 + 2\text{H}_2\text{O}$
(ii) $\text{CuO} + \text{H}_2 \longrightarrow \text{Cu} + \text{H}_2\text{O}$
(iii) $\text{PbO} + \text{C} \longrightarrow \text{Pb} + \text{CO}$
28. Write the chemical equation of the reaction in which the following changes have taken place with an example of each:
(i) Change in colour
(ii) Change in temperature
(iii) Formation of precipitate

OR

While eating food you spill some curry on your white shirt. You immediately scrub it with soap. What happens to its yellow colour on scrubbing with soap? What happens to this stain when the shirt is washed with plenty of water?

29. What is allotropy? Give two properties of diamond.
30. (i) What do you mean by ten percent law given by Lindeman?
(ii) What is the importance of decomposers in an ecosystem?

OR

Differentiate between biodegradable and nonbiodegradable wastes. Give two examples of each.

31. List any three characters which Mendel studied in garden pea plants. Also give their dominant and recessive forms.
32. (i) Draw a well labelled diagram showing structure of heart.
(ii) What is the function of RBC in blood?
33. Draw a circuit diagram of an electric circuit containing a cell, a key, an ammeter, a resistor of 4Ω in series with a combination of two resistors (8Ω each) in parallel and a voltmeter across this parallel combination. Each of them dissipate energy and can withstand a maximum power of $16W$ without melting. Find the maximum current that can flow through the three resistors.

SECTION-D

34. How does metallic character vary across a period? Give the decreasing order of atomic size of group 2nd elements. Which is the most electronegative element among group 17 elements?

OR

State reason for the following statements.

- (i) Tap water conducts electricity, whereas distilled water does not.
- (ii) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does.
- (iii) During summer season, a milk man usually adds very small amount of baking soda to fresh milk.
- (iv) For dilution of acids, acid is added into water and not water into acid.
- (v) Curd and sour substances not be kept in brass and copper vessels.
35. Describe female reproductive system in humans with the help of a well labelled diagram.

OR

- (i) List the various methods of contraception with one example of each.
- (ii) What do you mean by sexually transmitted diseases? Give two examples.
36. (a) Explain the term refraction of light.
- (b) Letters written on paper when seen through a rectangular glass slab appear to be raised. Explain this phenomenon with the help of ray diagram.
- (c) A diamond of refractive index 2.42 is kept inside a glass container filled completely with a liquid. Calculate the refractive index of diamond with respect to the liquid. (Speed of light in liquid = 1.5×10^8 m/s)