

Half Yearly Exam. 2024 – 2025**Time - 3:00 Hrs.****M.M. 80****General Instructions:**

- (i) This question paper comprises 39 questions. All questions are compulsory.
- (ii) This question paper is divided into five sections A, B, C, D and E.
- (iii) Section A Questions No. 1 to 20 are multiple choice questions. Each question carries 1 mark.
- (iv) Section B Questions No. 21 to 26 are very short answer type questions. Each question carries 2 marks.
- (v) Section C Questions No. 27 to 33 are short answer type questions. Each question carries 3 marks.
- (vi) Section D Questions No. 34 to 36 are long answer type questions. Each question carries 5 marks.
- (vii) Section E Questions No. 37 to 39 are of 3 source-based/case-based units of assessment carrying 4 marks each with sub-parts.

SECTION – A

Select and write the most appropriate option out of the four options given for each of the questions no. 1 to 20.

- Q.1** $\text{Zn} + 2\text{CH}_3\text{COOH} \rightarrow (\text{CH}_3\text{COO})_2\text{Zn} + \text{H}_2$
The above reaction is a :
(a) Decomposition reaction (b) Displacement reaction
(c) Double displacement reaction (d) Combination reaction
- Q.2** Four solutions, namely glucose, alcohol, hydrochloric acid and sulphuric acid filled in four separate beakers are connected one by one in an electric circuit with a bulb. The solutions in which the bulb will glow when current is passed are :
(a) Glucose and alcohol (b) Alcohol and hydrochloric acid
(c) Glucose and sulphuric acid (d) Hydrochloric acid and sulphuric acid
- Q.3** Which of the following is a redox reaction, but not a combination reaction ?
(a) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$ (b) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
(c) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$ (d) $\text{Fe}_2\text{O}_3 + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}_2$
- Q.4** A metal X is used in thermit process. When X is heated with oxygen, it gives an oxide Y, which is amphoteric in nature. X & Y respectively are:
(a) Mn, MnO_2 (b) Al, Al_2O_3 (c) Fe, Fe_2O_3 (d) Mg, MgO
- Q.5** Carbon dioxide gas is not produced when hydrochloric acid reacts with :
(a) Limestone (b) Lime water (c) Baking Soda (d) Marble
- Q.6** In the electrolysis of water, if the mass of the gas collected at the anode is m_a and the mass of the gas collected at the cathode is m_c , the value of (m_c/m_a) is :
(a) 8 (b) 16 (c) $\frac{1}{16}$ (d) $\frac{1}{8}$
- Q.7** 2 g of yellow sulphur powder is burnt in a china dish and the fumes are collected in a test tube. Water is added in the test tube and the solution is tested separately with blue and red litmus paper. The correct option is :
(a) Blue litmus remains blue and red litmus turns blue.
(b) Blue litmus turns red and red litmus remains red.
(c) Blue litmus turns red and red litmus turns blue.
(d) Blue litmus remains blue and red litmus remains red.
- Q.8** The filtration unit of kidneys are called:
(a) ureter (b) urethra (c) neurons (d) nephrons
- Q.9** The correct sequence of reproductive stages seen in the flowering plants are :
(a) gametes, zygote, embryo seedling (b) Zygote, gametes, embryo seedling
(c) seedling, embryo, zygote, gametes (d) None of these

- Q.10** A sportsman after a long break of his routine exercise suffered from muscular cramps during a heavy exercise session this happened due to :
 (a) lack of CO_2 and formation of pyruvate
 (b) presence of Oxygen and formation of ethanol
 (c) lack of Oxygen and formation of lactic acid
 (d) lack of Oxygen and formation of carbon dioxide
- Q.11** Which is the first enzyme to mix with the food in the digestive tract .
- Q.12** Where should an object be placed in front of a convex lens to get real image of the size of the object?
 (a) At focus (b) At $2F$ (c) At Infinity (d) Between optical centre and focus
- Q.13** Which of the following phenomenon contributes significantly to the reddish appearance of the sun at sunrise or sunset?
 (a) Dispersion of light (b) Scattering of light
 (c) Total internal Reflection (d) Reflection of light from the earth
- Q.14** Resistivity of a metallic wire depends on
 (a) its length (b) its shape (c) its thickness (d) nature of material
- Q.15** Which of the following is mismatched :
 (a) cerebrum – memory (b) medulla oblongata -temperature regulation
 (c) cerebellum- equilibrium (d) hypothalamus- control pituitary
- Q.16** In a neuron, conversion of electrical signals to a chemical signal occurs at or in -
 (a) Cell body (b) axonal end (c) dendritic end (d) Axon
- For Questions number 17 to 20, two statements are given one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.**
- (a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).
 (b) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).
 (c) Assertion (A) is true, but Reason (R) is false.
 (d) Assertion (A) is false, but Reason (R) is true.
- Q.17** Assertion (A) : Reaction of Quicklime with water is an exothermic reaction.
 Reason (R) : Quicklime reacts vigorously with water releasing a large amount of heat.
- Q.18** Assertion : Valves are present in the arteries .
 Reason : Arteries carry oxygenated blood from heart to different body parts except the pulmonary artery .
- Q.19** Assertion: Surgical methods are most effective methods of contraception .
 Reason: Surgical method block gamete transport and hence prevent fertilization .
- Q.20** **Assertion(A):** For observing traffic at back, the driver mirror is convex mirror.
Reason (R) : A convex mirror has much larger field of view than a plane mirror.

SECTION – B

Questions no. 21 to 26 are very short answer type questions

- Q.21** (a) When copper powder is heated in a watch glass, a black substance is formed.
 (i) Why is this black substance formed ? Name it.
 (ii) How can this black substance be reversed to its original form ?

OR

- (b) The industrial process used for the manufacture of caustic soda involves electrolysis of an aqueous solution of compound 'X'. In this process, two gases 'Y' and 'Z' are liberated. 'Y' is liberated at cathode and 'Z', which is liberated at anode, on treatment with dry slaked lime forms a compound 'B'. Name X, Y, Z and B.
- Q.22** What are plant hormones write the names of four plant hormones.
- Q.23** How is the process of pollination different from fertilization .

OR

Draw a well labelled diagram of the longitudinal section of flower.

Q.24 Absolute refractive Index of some of material is tabulated below

Material	Rock salt	Kerosene	Water	Diamond
Refractive	1.54	1.44	1.33	2.42

(i) In which of these does light travel fastest and why?

(ii) Arrange these materials in ascending order of their optical densities.

Q.25 Define rainbow. How it is formed. Name the phenomenon involved in the formation of rainbow?

Q.26 Define electric potential and write its S.I. unit?

SECTION – C

Questions no. 27 to 33 are short answer type questions.

Q.27(a) Suggest one remedial measure each to counteract the change in pH in human beings in following cases:

(i) Production of too much acid in stomach during indigestion

(ii) Sting by a honey bee/ nettle leaves

(b) Fresh milk has a pH of 6. When it changes into curd will its pH increase or decrease? Why?

Q.28 State reasons for the following:

(a) Zinc oxide is an amphoteric oxide.

(b) Sodium metal is stored in bottle filled with kerosene oil.

(c) In the reactions of nitric acid with metals, generally hydrogen gas is not evolved.

OR

A reddish Brown metal 'X' when heated in air, gives a black compound 'Y' which when heated in presence of H_2 gas gives 'X' back. X' is refined by the process of electrolysis; this refined form of 'X' is used in electrical wiring. Identify 'X' and 'Y'. draw a well labeled diagram to represent to the process of refining 'X'.

Q.29 Describe budding, binary fission regeneration with diagram.

Q.30 Write the name and role of hormones secreted from :

(i) pituitary gland

(ii) pancreas

(iii) testes

Q.31 Find the position, nature and size of the image formed by a convex lens of focal length 12 cm of an object 5 cm high placed at a distance 20 cm from it.

Q.32 (a) Define ohm's law and write its mathematical relation?

(b) Calculate the resistance of an electric bulb which allows a 10A current when connected to a 220V power source?

Q.33 (i) Why it is important for us to have a iodized salt in our diet?

(ii) Write the name of disease caused of the deficiency of insulin and thyroxin hormone.

SECTION – D

Questions no. 34 to 36 are long answer type questions.

Q.34 (a) When lead nitrate is heated strongly in a boiling tube, two gases are liberated and a solid residue is left behind in the test tube.

(i) Name the type of chemical reaction and define it.

(ii) Write the name and formula of the coloured gas liberated.

(iii) Write the balanced chemical equation for the reaction.

(iv) Name the residue left in the test tube and state the method of testing its nature (acidic/basic).

OR

(b) (i) Write balanced chemical equation for the following word equation.

Lead nitrate + Potassium iodide \rightarrow Lead iodide + Potassium nitrate is this a double displacement reaction ?

Justify your answer. Name the compound precipitated and write the ions present in it.

- (ii) Write the method of preparation of Ca(OH)_2 . What happens when CO_2 is passed through it? Write balanced chemical equation for the reaction involved.

- Q.35** (a) What is the role of seminal vesicle and prostate gland in human beings
(b) "When we are injured & start bleeding it requires the loss of blood from the system to be minimised." What will happen if the blood loss is not stopped? Is there anything the system would do on its own to prevent the loss?

OR

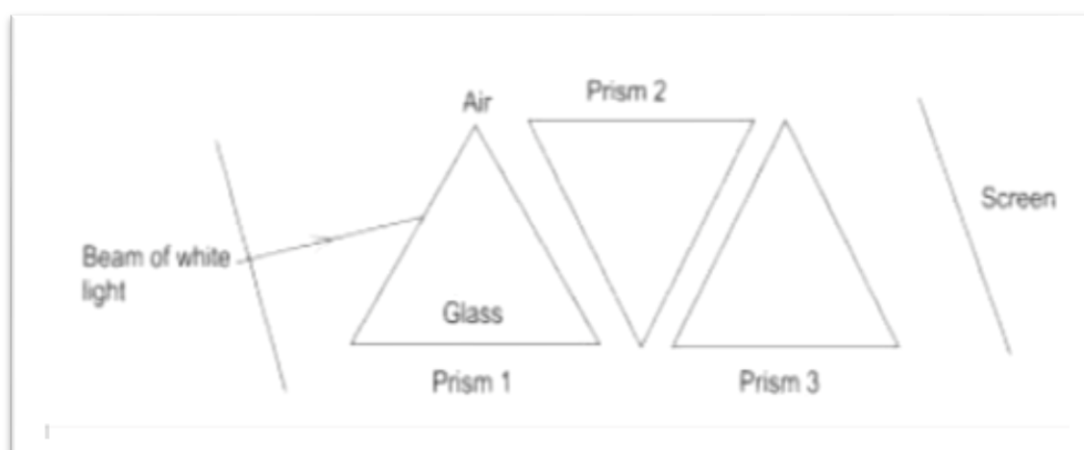
- (a) Draw a well labelled diagram of human digestive system.
(b) Define the following terms : (i) hemodialysis (ii) dental caries.

- Q.36** A 14 year old student is not able to see clearly the questions written on the black board placed at a last row?

- (a) Name the defect of vision he is suffering from?
(b) Draw the diagram to show this defect?
(c) Name the type of lens used to correct this defect?
(d) Name two possible cause of this defect.
(e) Draw the diagram to show how this defect can be corrected.

OR

Savera passed a beam of white light through a series of equilateral prisms as shown.



- (i) What colour(s) will be seen on the screen?
(ii) Copy the diagram above and draw the beam entering Prism 1 and emerging from Prism 3 and falling on the screen
(iii) Name all the processes that take place when the beam of light enters the Prism 1 and emerges from Prism 3.

SECTION – E

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

- Q.37** The melting points and the boiling points of ionic compounds are comparatively much higher than that of the covalent compounds. The ionic compounds are so called because they are formed by the transfer of electrons from a metal to a non-metal. In the ionic compounds, the transfer of electrons from one element to the other is controlled by their electronic configurations. It is because every element tends to attain a completely filled valence shell of its nearest noble gas or a stable octet.

- (a) The atomic number of sodium is 11. Write its electronic configuration and state the number of electrons it can lose to have a stable octet.
(b) The atomic number of chlorine is 17. Write its electronic configuration. Name the nearest noble gas whose octet chlorine will attain after gaining one electron.

- (c) (i) Show the formation of MgO by the transfer of electrons. The atomic numbers of magnesium and oxygen are 12 and 8 respectively.

OR

- (ii) Write the symbols and names of the anion and the cation present in the aqueous solution of the following compounds : (I) Sodium chloride (II) Potassium nitrate

Q.38 We think about our actions writing, talking, moving a chair, clapping at the end of program are examples of voluntary actions which are based on deciding what to do next. So the brain also has to send messages to muscles this is the second way in which the nervous system communicates with the muscles.

The communication between the CNS and the other parts of the body is facilitated by the peripheral nervous system consisting of cranial nerves arising from the brain and spinal nerves arising from this spinal cord. The brain thus allows us to think and take action based on that thinking.

- (i) What are the three major parts of brain.
- (ii) What are the functions of hypothalamus.
- (iii) Which fluid is present in our brain and write its function.

OR

What are voluntary and involuntary actions with examples.

Case Study

Q.39 Read the passage given below and answer the following questions that follow:

The inner workings of the human eye are complex, but at the same time, fascinating. Have you wondered how exactly they do work and what are the major parts of the eye involved in creating vision? It helps us in visualizing objects and also helps us in light perception, colour and depth perception. Besides, these sense organs are pretty much similar to cameras and they help us see objects when light coming from outside enters into them. The structures and functions of the eyes are complex. Each eye constantly adjusts the amount of light it lets in, focuses on objects near and far and produces continuous images that are instantly transmitted to the brain.

- (a) Where will be the image formed by eye lens?
- (b) What is the near point and far point of a young adult with normal vision?
- (c) What is the function of CORNEA?

OR

- (c) What do you mean by power of accommodation?
