

MOCK SCIENCE SUBJECTIVE TEST
CLASS – X (SET – 2)**Maximum Marks: 80****Duration: 3.0 Hrs.**

Life, Process, Control and Coordination, Human Eye, Light, Chemical Reactions and Equations, Acids Bases and Salts, Metals and Non-Metals

General Instructions:

- This question paper consists of **39 questions**. All questions are compulsory.
- Paper Pattern and Marking Scheme:**
There are **Five Sections** in the question paper (Section **A, B, C, D** and **E**).
 - In **Section A** – question numbers **1 to 20** are Multiple Choice Questions (MCQs) carrying **1** mark each.
 - In **Section B** – question numbers **21 to 26** are Very Short Answer Questions (VSA) type carrying **2** marks each. Answer to these questions should be in the range of **30** to **50** words.
 - In **Section C** – question numbers **27 to 33** are Short Answer Questions (SA) type carrying **3** marks each. Answer to these questions should be in the range of **50** to **80** words.
 - In **Section D** – question numbers **34 to 36** are Long Answer Questions (LA) type carrying **5** marks each. Answer to these questions should be in the range of **80** to **120** words.
 - In **Section E** – question numbers **37 to 39** are 3 source-based/case-based units of assessment carrying **4** marks each with sub-parts.
 - There is no overall choice. However, an internal choice has been provided in some Sections.

(SECTION – A)

- The magnification produced by a convex mirror will be:
(A) Positive and greater than unity (B) Negative and less than unity
(C) Positive and less than unity (D) Negative and greater than unity.
- A lens with power -4 D is a:
(A) Convex lens of focal length -4 m (B) Concave lens of focal length -4 m
(C) Convex lens of focal length -0.25 m (D) Concave lens of focal length -0.25 m

3. One half of a convex lens is covered with a black paper. As compared with the image formed with lens uncovered lens, the image formed in this case will:
- (A) Be half in size (B) Have the same intensity
(C) Be identical (D) Be same but its intensity will reduce
4. A ray of light entering into a prism from air bends:
- (A) Once towards the base (B) Once away from the base
(C) Twice towards the base (D) Twice away from the base
5. The stars twinkle on a clear night due to the :
- (A) Atmospheric refraction (B) Dispersion of light
(C) Scattering of light (D) Reflection of light
6. Ravi is unable to read the letters while writing. He is suffering from :
- (A) Hypermetropia (B) Myopia (C) Presbyopia (D) Colour blindness
7. **Assertion (A) :** Refractive index has no units.
Reason (R) : The refractive index is a ratio of two similar quantities.
Choose the correct answer out of the following choices.
- (A) Both assertion and reason are true, and reason is correct explanation of the assertion.
(B) Both assertion and reason are true, but reason is not the correct explanation of the assertion.
(C) Assertion is true, but reason is false.
(D) Assertion is false, but reason is true.
8. The following reaction is an example of a:
- $$4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \rightarrow 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{g})$$
- (i) Displacement reaction (ii) Combination reaction
(iii) Redox reaction (iv) Neutralization reaction
(A) (i) and (ii) (B) (ii) and (iii) (C) (i) and (iii) (D) (iii) and (iv)
9. Which of the following statements about the given reaction are correct?
- $$3\text{Fe}(\text{s}) + 4\text{H}_2\text{O}(\text{g}) \rightarrow \text{Fe}_3\text{O}_4(\text{s}) + 4\text{H}_2(\text{g})$$
- (i) Iron metal is getting oxidized (ii) Water is getting reduced
(iii) Water is acting as reducing agent (iv) Water is acting as oxidizing agent
(A) (i), (ii) and (iii) (B) (iii) and (iv) (C) (i), (ii) and (iv) (D) (ii) and (iv)
10. Common salt besides being used in kitchen can also be used as the raw material for making:
- (i) Washing soda (ii) Bleaching powder
(iii) Baking soda (iv) Slaked lime
(A) (i) and (iii) (B) (i), (ii) and (iv)
(C) (i) and (ii) (D) (i), (iii) and (iv)

11. Calcium phosphate is present in tooth enamel. Its nature is:
(A) Basic (B) Acidic (C) Neutral (D) Amphoteric
12. Which of the following are not ionic compounds?
(i) KCl (ii) HCl (iii) CCl₄ (iv) NaCl
(A) (i) and (ii) (B) (ii) and (iii) (C) (iii) and (iv) (D) (i) and (iii)
13. Which of the following statements about the given reactions is correct?
$$\text{ZnO} + \text{CO} \longrightarrow \text{Zn} + \text{CO}_2$$

(A) ZnO is being oxidizing (B) CO is being reduced
(C) CO₂ is being oxidized (D) ZnO is being reduced
14. Which of the following pairs will give displacement reactions?
(A) NaCl solution and copper metal (B) MgCl₂ solution and aluminium metal
(C) FeSO₄ solution and silver metal (D) AgNO₃ solution and copper metal
15. Which of the following is a function of red blood cells?
(A) forms blood clot (B) carry oxygen
(C) fights infection (D) regulate osmotic pressure
16. What structure divides into the right and left primary bronchi?
(A) Pharynx (B) Larynx (C) Trachea (D) Alveoli
17. The venae cavae return blood directly to the _____ of the heart:
(A) Left auricle (B) Right ventricle (C) Right atrium (D) Left atrium
18. Which one among the following is not removed as a waste product from the body of a plant?
(A) Resins and Gums (B) Urea
(C) Oxygen (D) Excess water
19. Opening and closing of stomatal pore depends on:
(A) Atmospheric pressure only
(B) Oxygen concentration around stomata
(C) Carbon dioxide concentration around stomata
(D) Water content in the guard cells (change in turgor pressure)
20. Name the plant hormone which act as plant growth inhibitor.
(A) Auxin (B) Gibberellin (C) Abscisic acid (D) Cytokinin

(SECTION – B)

21. Define reflection of light and state the laws of reflection.

(OR)

A concave mirror of focal length 12 cm is placed at a distance of 60 cm from a wall. How far from the wall an object be placed so that its sharp image formed by the mirror falls on the wall.

22. Draw the ray diagram for image formation by concave mirror when:

(a) Object is at infinity

(b) Object is placed between pole(P) and Focus(F)

23. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of the chemical reaction?

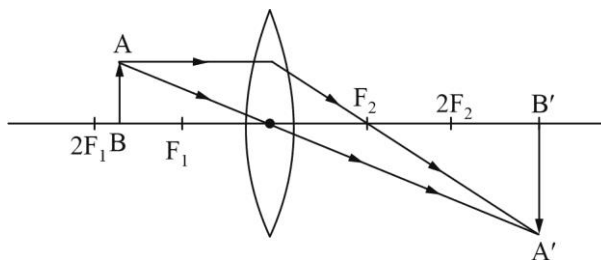
24. In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as by product. The gas X reacts with lime water to give a compound Y which is used as a bleaching agent in chemical industry. Identify X and Y giving the chemical equation of the reaction involved.

25. Name the glands present in the wall of the stomach that release secretions for digestion of food. Write the three components of secretion that are released by these glands.

26. What are hormones? Name the hormone secreted by thyroid gland and state its function.

(SECTION – C)

27. Study the ray diagram given below and answer the questions that follows:



(a) Is the type of lens used converging or diverging?

(b) List three characteristics of the image formed.

(c) In which position of the object will the magnification be -1 ?

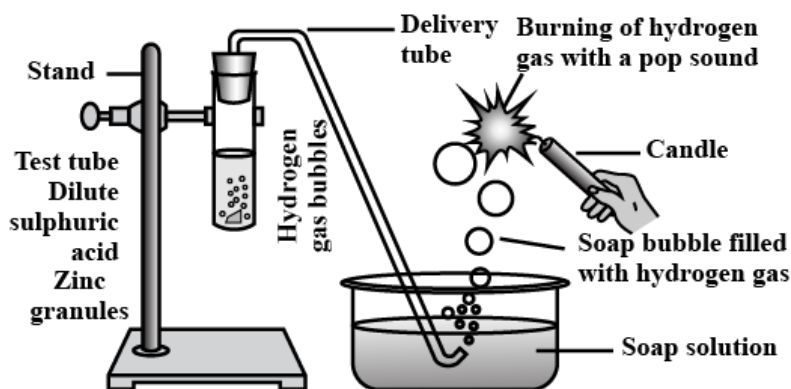
28. It is observed that the power of an eye to see nearby objects as well as far off objects diminishes with age.

(i) Give reason for the above statement

(ii) Name the defect that is likely to arise in the eyes in such a condition

(iii) Draw a labelled ray diagram to show the type of corrective lens used for restoring the vision of such an eye.

29. Write the balanced chemical equations for the following reactions:
- Sodium carbonate on reaction with hydrochloric acid in equal molar concentration gives sodium chloride and sodium hydrocarbonate.
 - Sodium hydrogencarbonate on reaction with hydrochloric acid gives sodium chloride, water and liberates carbon dioxide.
 - Copper sulphate on treatment with potassium iodide precipitates cuprous iodide (Cu_2I_2), liberates iodine gas and also forms potassium sulphate.
30. In the following schematic diagram for the preparation of hydrogen gas as shown in figure. What would happen if following changes are made?



- In place of zinc granules, same amount of zinc dust is taken in the test tube.
 - Instead of dilute sulphuric acid, dilute hydrochloric acid is taken.
 - In place of zinc, copper turnings are taken
 - In place of dilute sulphuric acid, NaOH solutions is used.
31. Given below are the steps for extraction of copper from its ore. Write the reaction involved.
- Roasting of copper (I) sulphide
 - Reduction of copper (I) oxide with copper (I) sulphide
 - Electrolytic refining
 - Draw a neat and well labelled diagram for electrolytic refining of copper
32. What is meant by double circulation? write its significance?
33. What is the procedure advised for the correction of extreme renal failure? Give a brief account of it.:

(SECTION – D)

34. An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.
- Use the lens formula to find the distance of the image from the lens.
 - List four characteristics of the image formed. (nature, position, size, erect/ inverted)
 - Draw a ray diagram to justify your answer
- OR**
- State snell's law of refraction of light
 - When a ray of light travelling in air enters obliquely into a glass slab : it is observed that the light ray emerges parallel to the incident ray but it is shifted side rays slightly. Draw a labelled ray diagram to illustrate it.
35. Explain the following:
- Reactivity of Al decreases if it is dipped in HNO_3
 - Carbon cannot reduce the oxides of Na or Mg
 - NaCl is not a conductor of electricity in solid state whereas it does conduct electricity in aqueous solution as well as in molten state
 - Iron articles are galvanized
 - Metals like Na, K, Ca and Mg are never found in their free state in nature
36. Explain the process of the transport and release of a neurotransmitter with the help of a labelled diagram showing a complete neuron, axon terminal and synapse.

(SECTION – E)

37. Read the following and answer the following questions from (i) to (iv).

The spreading of light by the air molecules is called scattering of light. The light having least wavelength scatters more. The sun appears red at sunrise and sunset, appearance of blue sky it is due to the scattering of light. The colour of the scattered light depends on the size of particles. The smaller the molecules in the atmosphere scatter smaller wavelengths of light. The amount of scattering of light depends on the wavelength of light. When light from sun enters the earth's atmosphere, it gets scattered by the dust particles and air molecules present in the atmosphere. The path of sunlight entering in the dark room through a fine hole is seen because of scattering of the sun light by the dust particles present in its path inside the room.

- (i) To an astronaut in a spaceship, the colour of earth appears
(A) red (B) blue (C) white (D) black
- (ii) The colour of sky appears blue, it is due to the:
(A) refraction of light through the atmosphere
(B) dispersion of light by air molecules
(C) scattering of light by air molecules
(D) all of these
- (iii) The danger signs made red in colour, because:
(A) refraction of light through the atmosphere
(B) the scattering of red light is least
(C) dispersion of light by air molecules
(D) none of these
- (iv) At the time of sunrise and sunset.
(A) Blue colour scattered and red colour reaches our eye
(B) Red colour scattered and blue colour reaches our eye
(C) Green and blue scattered and orange reaches our eye
(D) None of these

38. The processes in which the original substances lose their nature and identity and form new chemical substances with different properties are called chemical changes, the process involving chemical change is a chemical reaction. It includes change in state, colour, temperature, evolution of gas, etc. In a combination reaction, two or more substances react to form a new substance. Reaction in which a single compound breaks into two or more simpler substances is decomposition reaction.

- (i) The characteristics of chemical reaction is:
(A) change in state (B) change in colour
(C) both (D) none of these

- (ii) Decomposition reactions are reverse of:
(A) chemical reaction (B) chemical change
(C) combination reaction (D) displacement reaction
- (iii) Digestion of food is:
(A) combination reaction (B) decomposition reaction
(C) displacement reaction (D) neutralization reaction
- (iv) Which of the following is not used to undergo decomposition?
(A) Heat (B) Electricity (C) Electric arc (D) Light

39. The small intestine is the site of the complete digestion of carbohydrates, proteins and fats. It receives the secretions of the liver and pancreas for this purpose. The food coming from the stomach is acidic and has to be made alkaline for the pancreatic enzymes to act. Bile juice from the liver accomplishes this in addition to acting on fats. Fats are present in the intestine in the form of large globules which makes it difficult for enzymes to act on them. Bile salts break them down into smaller globules increasing the efficiency of enzyme action. This is similar to the emulsifying action of soaps on dirt. The pancreas secretes pancreatic juice which contains enzymes like trypsin for digesting proteins and lipase for breaking down emulsified fats. The walls of the small intestine contain glands which secrete intestinal juice. The enzymes present in it finally convert the proteins to amino acids, complex carbohydrates into glucose and fats into fatty acids and glycerol.

- (i) Complete digestion of carbohydrates occurs in:
(A) Stomach (B) Large intestine (C) Small intestine (D) Liver
- (ii) Secretions of the liver and pancreas received by:
(A) Stomach (B) Small intestine (C) Large intestine (D) Liver
- (iii) Trypsin enzyme secreted by:
(A) Pancreas (B) Small intestine (C) Large intestine (D) Liver
- (iv) Emulsification of fat is done by:
(A) Pancreas (B) Small intestine (C) Large intestine (D) Bile juice