

MT EDUCARE LTD.**QUEST - I (Semi Prelim I)
(2018-19)**

Portion : Light: Reflection and Refraction, Human Eye and the colourful world, Chemical reactions and equations, Acids, bases and salts, Metals and nonmetals, Life Process, Control and Coordination, Our Environment

CBSE - XRoll No.

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Code No. **32/1****Series RLH**

- Please check that this question paper contains 6 printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains 27 questions.
- Please write down the serial number of the question before attempting it.

SCIENCE (Theory)**Time allowed :** 3 hours**Maximum Marks :** 80**General Instructions :**

- i) The question paper comprises of **five Sections A, B, C, D and E**. You are to attempt all the sections.
- ii) All questions are **compulsory**.
- iii) **Internal choice** is given in **Q.No.6, 10, 13, 17, 21** and **Q.No. 26**.
- iv) Questions numbers **1 to 2** in **Section - A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.
- v) Question numbers **3 to 5** in **Section - B** are **two marks** questions. These are to be answered in about **30 words** each.
- vi) Question numbers **6 to 15** in **Section - C** are **three marks** questions. These are to be answered in about **50 words** each
- vii) Question numbers **16 to 21** in **Section - D** are **five marks** questions. These are to be answered in about **70 words** each
- ix) Question numbers **22 to 27** in **Section - E** are **two marks** questions based on practical skills. These are to be answered in brief.

SECTION - A

1. How do plants obtain nitrogen ? [1]
2. Which disease is caused in human beings due to depletion of ozone layer in the atmosphere? [1]

SECTION - B

3. Identify the reducing agent in the following reactions.
 - (a) $4\text{NH}_3 + 5\text{O}_2 \longrightarrow 4\text{NO} + 6\text{H}_2\text{O}$
 - (b) $\text{H}_2\text{O} + \text{F}_2 \longrightarrow \text{HF} + \text{HOF}$
 - (c) $\text{Fe}_2\text{O}_3 + 3\text{CO} \longrightarrow 2\text{Fe} + 3\text{CO}_2$
 - (d) $2\text{H}_2 + \text{O}_2 \longrightarrow 2\text{H}_2\text{O}$ [2]
4. By drawing a ray diagram, explain the formation of image when an object is placed on the principal axis of a convex lens at the following position : Between F_1 and $2F_1$ [2]
5. (i) In which of the given media, light moves the fastest ?

Medium	Refractive index
Water	1.33
Ice	1.31
Alcohol	1.36

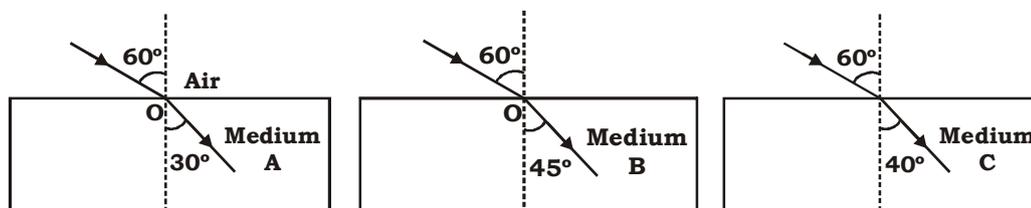
 (ii) Using above table, calculate the velocity of light in water. [2]

SECTION - C

6. The near point of a person suffering from hypermetropia is 75 cm. Calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm from the eye [3]

OR

6. What is the minimum number of rays required for locating the image formed by a concave mirror for an object? Draw a ray diagram to show the formation of a virtual image by a concave mirror. [3]
7. (a) The path of light passing from air to different media A, B, and C for a given angle of incidence is shown below. Study the diagrams and answer the following questions.



- (i) Which of the media A, B and C has maximum optical density ?
 - (ii) Through which of three media, will the speed of light be maximum ?
 - (iii) Will the light travelling from A to B bend towards or away from the normal ?
- [3]**

8. **State reason for the following :**

- (i) Lemon is used for restoring the shine of tarnished copper vessels.
 - (ii) A metal sulphide is converted into its oxide to extract the metal from the sulphide ore.
 - (iii) Copper wires are used in electrical connections.
- [3]**

9. **Translate the following statements into chemical equations and then balance the equations:**

- (i) Phosphorus burns in oxygen to give phosphorus pentoxide.
 - (ii) Aluminium metal replaces iron from ferric oxide, giving aluminium oxide and iron.
 - (iii) Barium chloride reacts with zinc sulphate to give zinc chloride and barium sulphate.
- [3]**
10. Explain how the electrical impulse travels through the synapse ? **[3]**

OR

10. Differences between Blood and Lymph. **[3]**
11. What is biological magnification? Will the levels of this magnification be different at different levels of the ecosystem? **[3]**
12. (a) State the type of mirror preferred as
- (i) Rear view mirror in vehicles,
 - (ii) Shaving mirror. Justify your answer giving two reasons in each case.
- [3]**
13. Solid calcium oxide was taken in a container and water was added slowly to it.
- (i) State the two observations made in the experiment.
 - (ii) Write the name and chemical formula of the product formed.
- [3]**

OR

13. A brown substance 'X' on heating in air forms a substance 'Y'. When hydrogen gas is passed over heated 'Y', it again changes back into 'X'.
(i) Name the substances 'X' and 'Y'.
(ii) Name the type of chemical reactions occurring during both the changes.
(iii) Write the chemical equations of the reactions. [3]
14. Differentiate between tropic and nastic movements. [3]
15. What are the different ways in which glucose is oxidised to provide energy in various organisms? [3]

SECTION - D

16. (a) What is hypermetropia? State two causes of hypermetropia. Draw a labeled ray diagram to show how this defect may be corrected using spectacles of appropriate focal length.
(b) The near point of a hypermetropic eye is 1.0 m. Find the power of the lens required to correct this defect. The least distance of distinct vision for a normal eye is 25 cm. [5]
17. (a) A compound 'A' is used in fire extinguishers, as an antacid and its small amount is also used in making bakery items. Identify the compound and also explain the reason for above mentioned uses of the compound 'A'. [2]
(b) (i) Write the formula and chemical name of bleaching powder.
(ii) Write chemical equation to represent the action of atmospheric CO_2 gas on bleaching powder when left exposed in open.
(iii) State for what purpose is bleaching powder used in water treatment plants. [3]

OR

17. (a) Why do acids not show acidic behaviour in the absence of water? [2]
(b) A compound which is prepared from gypsum has the property of hardening when mixed with a proper quantity of water. Identify the compound. Write the chemical equation for its preparation. For what purpose is it used in hospitals? [3]
18. Name the source and one main function of the following. [5]
(1) Insulin (2) Testosterone (3) Progesterone

19. A beam of white light falling on a glass prism gets split up into seven colours marked 1 to 7 as shown in the diagram. A student makes the following statements about the spectrum observed on the screen.

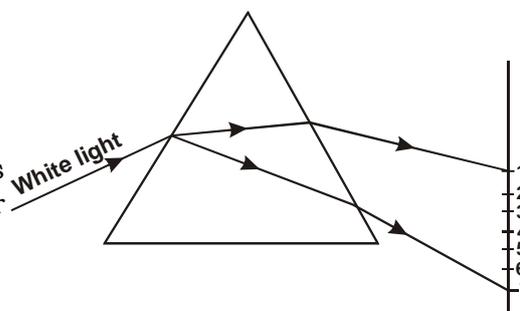
- a) The colours at position marked 3 and 5 are similar to the colour of the core of a hard-boiled egg colour and the colour of the sky respectively.

Is the statement made by the student correct or incorrect? justify.

- b) Which of the two positions correspond closely to the colour of

- (i) a solution of potassium permanganate,
(ii) Danger or stop signal light ?

- c) State and define the phenomenon observed.



[5]

20. Write about different chemical processes used for obtaining a metal from its oxides, for metals low in the reactivity series, metals in the middle of reactivity series and metals towards the top of the reactivity series.

[5]

21. (a) Draw and label the excretory system in human beings.
(b) Explain the excretory system.

[5]

OR

21. (a) What is a food chain? List its characteristic features.
(b) Why are only 4 or 5 trophic levels present in each food chain?

[1]

[2]

SECTION - E

22. On adding zinc granules to freshly prepared ferrous sulphate solution, what is it observed?

[2]

23. On adding a few drops of universal indicator to three unknown colourless solutions (P), (Q) and (R) taken separately in three test tubes, a student observed the changes in colour as green in (P), red in (Q) and violet in (R). What will be the decreasing order of pH? [2]
24. Leaves of a healthy potted plant were coated with vasline. Will this plant remain healthy for long ? Give reasons for your answer. [2]
25. List two reasons to show that the existence of decomposers is essential in an ecosystem. [2]
26. A student finds the writing on the blackboard blurred and unclear while sitting on the last desk in a classroom. He however, sees it clearly while sitting on the front desk at about 2 m from the blackboard.
(i) Name the kind of lens that would help him to see clearly even when he is seated at the last desk. Draw a ray diagram to illustrate how this lens helps him to see clearly. [2]

OR

26. A concave lens made of a material of refractive index n_1 is kept in a medium of refractive index n_2 . A parallel beam of light is incident on the lens. Complete the path of rays of light emerging from the concave lens if (i) $n_1 > n_2$ [2]
27. You are given a convex lens of focal length 10 cm. Where would you place an object to get a real, inverted and highly enlarged image of the object? Draw a ray diagram. [2]

All the Best 👍