VELAMMAL BODHI CAMPUS

Grade: X **CUMMULATIVE EXAM – I (2023-24)** **Sub:** Science

Date: 06.04.2023 **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 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 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

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

1.If an incident ray passes through the focus, the reflected ray will
(a) pass through the pole (b) be parallel to the principal axis
(c) retrace its path (d) pass through the centre of curvature

2. Which one of the following materials cannot be used to make a lens ?
(a) Water (b) Glass (c) Plastic (d) Clay

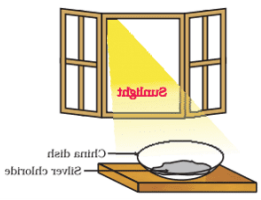
3. The image formed by a convex lens can be
(a) virtual and magnified (b) virtual and diminished
(c) virtual and of same size (d) virtual image is not formed

4.A spherical mirror and a spherical lens each have a focal length of -10 cm. The mirror and the lens are likely to be
(a) both concave (b) both convex
(c) the mirror is concave and the lens is convex
(d) the mirror is convex and the lens is concave

5 .The amount of light entering the eye can be controlled by the
(a) iris (b) pupil (c) cornea (d) ciliary muscles

6.When crystals of lead nitrate are heated strongly in a dry test tube
a) Crystals immediately melt b) A brown residue is left
c) White fumes appear in the tube d) A yellow residue is left

7.The silver chloride is placed under the sunlight as shown in the figure. The colour of silver chloride after some time is:
a) Black b) Green c) Grey d) Yellow



8.An aqueous solution turns red litmus solution blue. Excess addition of which of the following solution would reverse the change?
a) Baking powder b) Lime
c) Ammonium hydroxide solution d) Hydrochloric acid

9.Solid calcium oxide reacts vigorously with water to form calcium hydroxide accompanied by the liberation of heat. This process is called slaking of lime. Which among the following is/are true about slaking of lime?

i. It is an endothermic reaction.
ii. It is an exothermic reaction.
iii. The p^H of the resulting solution will be more than seven.
iv. The p^H of the resulting solution will be less than seven.

a) i and ii b) ii and iii c) i and iv d) iii and iv

10 A solution reacts with crushed egg-shells to give a gas that turns lime-water milky. The solution contains:

a) NaCl b) H_2SO_4 c) LiCl d) KCl

11. On passing CO_2 gas through a brine solution saturated with ammonia, the substance obtained is

a) NaOH b) $NaHCO_3$ c) $Na_2CO_3.10H_2O$ d) $Na_2CO_3.H_2O$

12. Which one of the following types of medicines is used for treating indigestion?

a) Antibiotics b) Analgesicc) Antacid d) Antiseptic

13**. Assertion (A):** A white washed wall develops a coating of calcium carbonate after a few days.
Reason (R): Calcium oxide on the wall reacts slowly with carbon dioxide in the air.

a) Both A and R are true and R is correct explanation of A

b) Both A and R are true and R is not correct explanation of A

c) A is true but R is false

d) A is false but R is true

14.In which of the following groups of organisms are food materials broken down outside the body and absorbed?

(a) Mushroom, green plants, amoeba
(b) Yeast, mushroom, bread mould
(c) Paramecium, amoeba, cuscuta
(d) Cuscuta, lice, tapeworm

15. The opening and closing of the stomatal pore depend upon:

(a) Oxygen
(b) Temperature
(c) Water in the guard cells
(d) Concentration of CO_2

16.Which of the following option shows the transport of oxygen to the cell correctly?

(a) Lungs →pulmonary vein →left atrium →left ventricle →aorta → body cells
(b) Lungs →pulmonary vein →right atrium →right ventricle → aorta → body cells
(c) Lungs →pulmonary artery →left atrium → left ventricle → vena cava → body cells
(d) Lungs →pulmonary artery →right atrium → right ventricle→ vena cava → body cells

17. Which of the following statements about autotrophs is incorrect?

A) They synthesize carbohydrates by using carbon dioxide, water in presence of sunlight and chlorophyll
B) They store carbohydrates in form of starch
C) They convert carbon dioxide and water into carbohydrates in the absence of sunlight
D) They form the first trophic level in the food chain

18. Which group of waste materials can be classified as non-biodegradable?
a) Plant waste, used tea bags
b) Polyethene bags, plastic toys
c) Used tea bags, paper straw
d) Old clothes, broken footwear

19. Which of the following is responsible for the depletion of the ozone layer
a) CFCs b) Oxygen c) SO_2 d) CO_2

20. Assertion (A) : Bile is essential for digestion of lipids.
Reason (R) : Bile juice contains enzymes.
a) Both A and R are true and R is correct explanation of A
b) Both A and R are true and R is not correct explanation of A
c) A is true but R is false
d) A is false but R is true

SECTION –B

Q. No. 21 to 26 are very short answer questions.

21.A. Define the term power of accommodation. Write the modification in the curvature of the eye lens which enables us to see the nearby objects clearly?

OR

21.B.Draw a ray diagram to show the refraction of light through a glass prism. Mark on it (a) the incident ray, (b) the emergent ray and (c) the angle of deviation.

22.Balance the following chemical equations
i) $Pb_3O_4 + HCl \text{ -------> } PbCl_2 + Cl_2 + H_2O$
ii) $FeS_2 + O_2 \text{ -------> } Fe_2O_3 + SO_2$

OR

While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid?
23. What will happen if we kill all the organisms in one trophic level?
24. What is biological magnification and give its causes?
25. Why do herbivores have longer small intestines than carnivores?
26.What are 4 types of excretory organs present in our body?

SECTION –C

Q.no. 27 to 33 are short answer questions

27.The linear magnification produced by a spherical mirror is +3. Analyse this value and state the (i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw a ray diagram to show the formation of image in this case.

28.List two causes of hypermetropia.
(b) Draw ray diagrams showing
(i) ahypermetropic eye and (ii) its correction using suitable optical device.

29.An object 4 cm in height, is placed at 15 cm in front of a concave mirror of focal length 10 cm. At what distance from the mirror should a screen be placed to obtain a sharp image of the object. Calculate the height of the image.

30. A group of students carried out electrolysis of acidified water in the laboratory. By the end of the experiment, two gases were collected in the test tubes at both electrodes.
i) Name the gases collected at the cathode and the anode respectively.
ii) The gas collected in one test tube is double the volume of gas collected in the other. Name this gas. Give reason for your answer.
iii)Write a balanced chemical equation to represent the electrolysis of water.

31.A white coloured powder is used by doctors for supporting fractured bones.
i)Write chemical name and formula of the powder.
ii) When this white powder is mixed with water a hard solid mass is obtained. write balanced chemical equation for the change.
iii) Write the chemical equation for the preparation of white colour powder

32.Draw a flow chart to show the breakdown of glucose by various pathways?

33.Draw a diagram of Ecological Pyramid, showing 4 trophic levels and mention the organisms of each level?

SECTION –D

Q.no. 34 to 36 are long answer questions

34.(A) One-half of a convex lens is covered with a black paper. Will this lens produce a complete image of the object ?Explain your observations.

(B) A convex lens forms a real and inverted image of a needle at a distance of 50 cm from it. Where is the needle placed in front of the convex lens if the image is equal to the size of the object ? Also, find the power of the lens. ,

OR

An object of size 7.0 cm is placed at 27 cm in front of a concave mirror of focal length 18 cm. At what distance from the mirror should a screen be placed, so that a sharp focussed image can be obtained ? Find the size and the nature of the image.

35.On heating blue coloured powder of copper (II) nitrate in a boiling tube , copper oxide (black) ,oxygen gas and a brown gas **X** is formed

i) Write a balanced chemical equation of the reaction
ii) Identify the brown gas **X** evolved
iii) Identify the residue formed
iv) Identify the type of reaction
v) What could be the P^H range of aqueous solution of the gas **X**

OR

a) A substance 'X' is used in the kitchen for making tasty crispy pakoras and is also an Ingredient of antacid. Name the substance 'X'.
i) How does 'X' help to make cakes and bread soft and spongy?
ii) Is the p^H value of the solution of 'X' is lesser than or greater than 7.0?
b). Write any three uses of washing soda?

36) a).Draw a well labelled diagram of Human excretory system (3m)
b).Write about artificial kidney? (2m)

OR

Explain about double circuit circulation of blood in human with the help of a diagram (5m)

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

The lenses forms different types of images when object placed at different locations. When a ray is incident parallel to the principal axis, then after refraction, it passes through the focus or appears to come from the focus.

When a ray goes through the optical centre of the lens, it passes without any deviation. If the object is placed between focus and optical centre of the convex lens, erect and magnified image is formed.

As the object is brought closer to the convex lens from infinity to focus, the image moves away from the convex lens from focus to infinity. Also the size of image goes on increasing and the image is always real and inverted.

A concave lens always gives a virtual, erect and diminished image irrespective to the position of the object.

QUESTIONS

(i) The location of image formed by a convex lens when the object is placed at infinity is
(a) at focus (b) at 2F (c) at optical centre (d) between Fand 2F

(ii) When the object is placed at the focus of concave lens, the image formed is
(a) real and smaller (b) virtual and inverted
(c) virtual and smaller (d) real and erect

(iii) The size of image formed by a convex lens when the object is placed at the focus of convex lens is
(a) small (b) point in size
(c) highly magnified (d) same as that of object

(iv) When the object is placed at 2F in front of convex lens, the location of image is
(a) at F (b) at 2 F on the other side
(c) at infinity (d) between F and optical center

38.**Read the following and answer any four questions from (I) to (V)**

Chemical equation is a method of representation of a chemical reaction with the help of symbols and formula of the substances involved ,in a chemical equation ,the substance which combine or react are called reactants and new substances are called products .A chemical equation is a short hand method of representing a chemical reaction . A balanced chemical equation has equal number of atoms of different elements in the reactants and products side,An unbalanced chemical equation has unequal number of atoms of one or more elements in the reactants and products. Formula of the elements andcompounds are not changed to balance an equation

QUESTIONS

(i) Consider the following reaction

p Mg_3N_2 + q H_2O --------> r $Mg(OH)_2$ + s NH_3

When the equation is balanced the coefficients of p, q, r, s are respectively

a) 1, 3, 3, 2 b) 1, 6, 3, 2 c) 1, 2, 3, 2 d) 2, 3, 6, 2

(ii)Which of the following information not conveyed by balanced chemical equation

a) Quantitative relationship between reactants and products
b) Symbol and formula of all the substances involved in a particular reaction
c) Number of atoms/molecules of the reactants and products formed
d) Whether a particular reaction is actually feasible or not

(iii) Balancing of chemical equation is in accordance with
a) Law of combining volumes b) Law of constant Proportions
c) Law of conservation of mass d) both (a) and (b)

IV. Which of the following chemical equation is an unbalanced one
a) $4NH_3 + 5O_2 \rightarrow 4NO + 3H_2O$ b) $H_2O + F_2 \rightarrow HF + HOF$
c) $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$ d) $2H_2 + O_2 \rightarrow 2H_2O$

V. Which of the following statements is/are correct
a) In a balanced chemical equation, the total no of molecules are always equal on both sides
b) The total number of atoms of each elements are same on both sides in the balanced chemical equation
c) The total mass of the reactants is equal to total mass of the products in the balanced chemical equation
d) Both b and c

39. Read the passage and answer the following questions:
Blood transport food and waste materials in our bodies. It consists of plasma as a fluiid medium. (pumping organ is required to push the blood around. The blood flows through the chambers of the organ in a specific manner and direction. While flowing throughout the body, blood exert a pressure against the wall of a vessel.

QUESTIONS

a) . Which life process is depicted by the above passage?
b) Name the blood pumping organ?.
c). Oxygenated blood from lungs enters left atrium through.....?
d) (i)Deoxygenated blood leaves from. the right ventricle through .....?

(OR)

(ii) What is the role of Ozone layer in the atmosphere?