DELHI PUBLIC SCHOOL, JAMMU
SESSION- 2024-25
HALF YEARLY EXAMINATION
SAMPLE PAPER

CLASS-X **M.MARKS-80**
SUBJECT –SCIENCE **TIME-3HRS**

General instructions:

1.This question paper consists of 39 questions in 5 sections.
2.All questions are compulsory. However, an internal choice is provided in some questions.
3.Section A consists of 20 objective type questions carrying 1 mark each.
4 .Section B consists of 6 Very Short questions carrying 02 marks each.
5.Section C consists of 7 Short Answer type questions carrying 03 marks each.
6.Section D consists of 3 Long Answer type questions carrying 05 marks each.
7.Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION-A

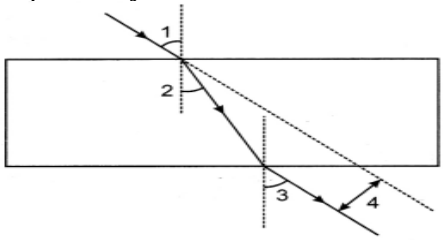
1.When light enters the atmosphere it strikes extremely fine particles, which deflect the rays of light in all possible directions, This is due to – 1

(a) Reflection of light (b) Scattering of light
(c) Atmospheric refraction (d) Dispersion of light

2.No matter how far you stand from a mirror, your image appears erect. The mirror is likely to be: 1

(a) Plane (b) Concave (c) Convex (d) All of the above

3. A student has traced the path of a ray of light through a glass slab as follows. If you are asked to label 1,2,3 and 4, the correct sequencing of labeling ∠i, ∠e, ∠r and lateral displacement respectively is: 1



(a) 2, 1, 3, 4 (b) 1, 2, 3, 4 (c) 1, 3, 2, 4 (d) 1, 3, 4, 2

4.In which mode of nutrition an organism de-rives its food from the body of another living organism without killing it? 1

(a) Saprotrophic nutrition (b) Parasitic nutrition
(c) Holozoic nutrition. (d) Autotrophic nutrition

5.Vena cava brings deoxygenated blood to the 1

(a) Right ventricle. (b) Left ventricle

(c) Right Atrium. (d) Left Atrium

6.Transportation of sugars (carbohydrates) in plants occurs through: 1

(a) Xylem (b) Phloem (c) Stomata (d) Chloroplast

7.The structural and functional unit of excretion in human beings is: 1

(a) Glomerulus (b) Nephron (c) Lymph nodes (d) Aorta

8.Which plant hormone promotes dormancy in seeds and buds? 1

(a) Auxin. (b) Gibberellin. (c) Cytokinin (d) Abscisic acid

9.Roots of plants are: 1

(a) positively geotropic (b) negatively geotropic

(c) positively phototropic (d) None of these

10.Baking powder is a mixture of: 1

(a) Calcium carbonate and acetic acid (b)sodium carbonate and tartaric acid

(b) sodium hydrogen carbonate and tartaric acid (c)sodium hydrogen carbonate and hydrochloric acid

11. Which of the following oxides of iron would be obtained on prolonged reaction of iron with steam? 1

(a) FeO (c) Fe_3O_4

(b) Fe_2O_3 (d) Fe_2O_3 and Fe_3O_4

12. Which property of metals is used for making cooking utensils and water boilers? 1

(a) Sonorousness (c) Ductility

(b) Malleability (d) Thermal Conductivity

13. Generally, non metals are not lustrous. Which of the following non-metal is lustrous? 1

(a) Sulphur (c) Oxygen

(b) Iodine (d) Phosphorous

14. Which of the following reactions represents a combination reaction? 1

(a) CaO **(s)** + H_2O **(l)** → $Ca(OH)_2$ **(aq)** (b) $CaCO_3$ **(s)** → CaO **(s)** + CO_2 **(g)**

(c) Zn **(s)** + $CuSO_4$ **(aq)** → $ZnSO_4$ **(aq)** + Cu **(s)**(d) $2FeSO_4$ **(s)** → Fe_2O_3 **(s)** +SO_2 **(g)** + SO_3 **(g)**

15 Which of the following reactions is used in black and white photography? 1

(a) Combination Reaction

(b) Photo Decomposition Reaction

(c) Displacement reaction

(d) Double displacement reaction

16. Complete the following statements by choosing correct type of reaction for X and Y. 1
Statement 1: The heating of calcium carbonate is an example of 'X' reaction.
Statement 2: The burning of magnesium ribbon is an example of 'Y' reaction.
(a) X- Combination, Y- Decomposition
(b) X- Decomposition, Y-Combination
(c) X- Combination, Y-Displacement
(d) X- Displacement, Y-Decomposition

Q17 to Q20 are Assertion-and-Reason Type questions.
Each question consists of two statements, namely, Assertion (A) and Reason (R).For selecting the correct answer, use the following code:
(a) Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are the true but Reason (R) is not a correct explanation of Assertion (A).
(c) Assertion (A) is true and Reason (R) is false.
(d) Assertion (A) is false and Reason (R) is true.

17.Assertion (A): Plants lack excretory organs. 1
Reason (R) : Plants usually absorb essential nutrients.

18.Assertion(A) : The brain is also known as the central nervous system. 1
Reason (R) : Central nervous system controls and regulates the voluntary actions.

19. Assertion: Metals are malleable and ductile. 1
Reason: They are generally brittle in solid state; they break into pieces when hammered.

20.Assertion : White light is dispersed into its seven-colour components by a prism. 1
Reason : Different colours of light bend through different angles with respect to the incident ray as they pass through a prism.

SECTION-B

21.Which mirror has a wider field of view and why? 2

22.Show diagrammatically, what happens to the ray of light when it travels from a rarer to a denser medium. 2

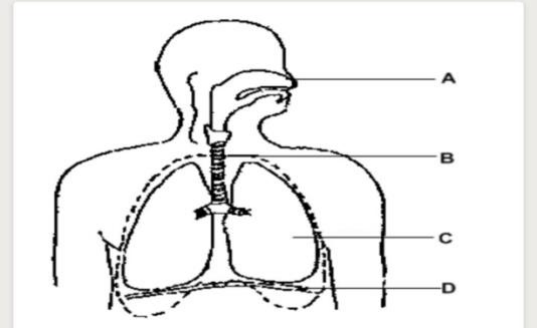
OR

Show diagrammatically, what happens to the ray of light when it travels from a rarer to a denser medium

23.Why are we not able to see things clearly when we come out of a dark room? 2

24. What is observed when a solution of potassium iodide is added to a solution of lead nitrate in a test tube? Write a balanced chemical equation to represent the above reaction. 2

25. Label the following parts of human respiratory system. A), B) ,C), D) 2



OR

What will happen to guard cells and the stomatal pore when water flows into guard cells?

26.Human brain can be broadly divides into three regions. Name them and give parts of any two of them. 2

SECTION-C

27. What does one mean by exothermic and endothermic reactions? Give examples. 3

28. What are amphoteric oxides? Give an example. Write balanced chemical equations to justify your answer. 3

OR

State the reason for the following:
(a) Sodium and potassium metals are kept immersed under kerosene oil.
(b) An iron nail dipped in blue copper sulphate solution turns blue into pale green solution.
(c) Hydrogen gas is not released when most metals react with nitric acid.

29.Major amount of water is selectively reabsorbed by the tubular part of nephron in humans. What are the factors on which the amount of water reabsorbed depends? 3

30.What are reflex actions? Explain a reflex arc with suitable example. 3

31.Name the hormones secreted by the following endocrine glands and specify one function of each: (a) Thyroid (b) Pituitary (c) Pancreas. 3

OR

Name the hormone required for the following. Also mention the name of endocrine gland from which that hormone is secreted:
(a) Lowering of blood glucose.
(b) Development of moustache and beard in human males.
(c) Metabolism of carbohydrates, fats and proteins

32**.**A person is able to see objects clearly only when these are lying at distance between 50 cm and 300 cm from his eye. 3
(i) What kind of defect of vision he is suffering from ?
(ii) What kind of lenses will be required to increase his range of vision from 25 cm to infinity? Explain briefly.

33. An object is placed at a distance of 12 cm in front of a concave mirror of radius of curvature 30 cm. List four characteristics of the image formed by the mirror. 3

SECTION-D

34.(a) Why is the electrolysis of concentrated solution of sodium chloride (brine) known as chlor-alkali process? Write the equation of the reaction involved? State one use of each of the products formed.
(b) Write an equation to show reaction between plaster of Paris and water. 5

OR

(a) How is bleaching powder prepared? Why is it used for disinfecting drinking water?
(b) Explain the use of sodium hydrogen carbonate in fire extinguishers.

35.What is Hydrotropism? How does it occur in plants? Describe an activity to demonstrate Hydrotropism. 5

OR

(a)What constitutes the central and peripheral nervous system? How are the components of central nervous system protected?
(b) What is the autonomic nervous system ?

36.(i) A doctor has prescribed a corrective lens of power +1.5 D. Find the focal length of the lens. Is the prescribed lens diverging or converging?

(ii) A concave lens of focal length 15 cm forms an image 10 cm from the lens. How far is the object placed from the lens? Draw the ray diagram. 5

OR

(i) Water has refractive index 1.33 and alcohol has refractive index 1.36. Which of the two medium is optically denser? Give reason for your answer.
(ii) Draw a ray diagram to show the path of a ray of light passing obliquely from water to alcohol.
(iii) State the relationship between angle of incidence and angle of refraction in the above case.

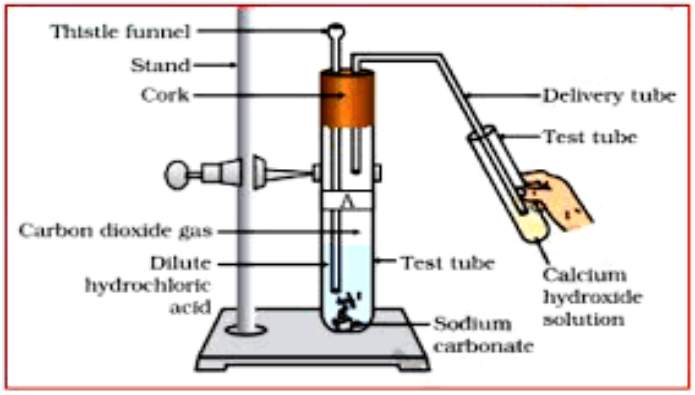
SECTION-E

37. 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. (1+1+2=4)
(i)Which colour has the minimum deviation?
(ii)Which colour has the least wavelength?
(iii)Why do stars twinkle?

OR

Why planets do not twinkle?

38. A student set up the following apparatus for preparing and testing carbon-dioxide gas in laboratory.
He took solid sodium carbonate and added dilute hydrochloric acid in a test tube fitted on a clamp stand. Brisk effervescence of a colourless and odourless gas was observed. 4



Answer the following questions on the basis of above observations:

(a) Write the chemical equation for the above reaction.
(b) What happens when carbon dioxide gas is passed through lime water? Write the chemical reaction involved?

OR

(b) What can be observed when a few pieces of marble are dropped in dilute hydrochloric acid, contained in a test tube? Write the chemical equation for the reaction involved.

39. The Human Digestive System, often known as the gastrointestinal system, is the component of the body that digests food. It breaks down meals into simple compounds that can be taken into the bloodstream; nutrients then travel to the liver, which acts as a chemical factory for the body. The liver's job is to modify the nutrients so that the mixture is just right for the body.

Digestion begins in the mouth. The food is ground up by the teeth and moistened with saliva to make it easy to swallow. Saliva also has a special chemical, called an enzyme, which starts breaking down carbohydrates into sugars. Once swallowed, muscular contractions of the oesophagus massage the ball of food down into the stomach. The stomach is a thick-walled bag-like structure. It receives food from the oesophagus at one end and opens into the small intestine at the other end.Food is churned into a semi-solid mass in the stomach and is called chyme.Hydrochloric acid helps in the partial digestion of proteins and also kills harmful bacteria. The mucus secreted by the wall of the stomach resists the action of HCl on itself. the stomach, the churning of food takes place due to the muscular contraction and relaxation of its wall. It breaks down the food into simpler substances. Digestion of proteins starts in the stomach with the action of pepsin. Proteins are broken down into smaller fragments called peptides by the action of pepsin. The bolus, after mixing with gastric juice, turns into a fine soluble form known as chyme.Chyme enters the small intestine, where complete digestion takes place due to the action of various enzymes present in the pancreatic juice, bile and intestinal juice. The digested food is completely absorbed by the villi and microvilli of the small intestine. Undigested food then enters the large intestine. The colon is responsible for

the absorption of water and salts, whereas the rectum stores the undigested food temporarily before defaecation. (1+1+2=4)

(a) Define emulsification of fats.

(b) Mention the role of saliva in the process of digestion.

(c) Where do carbohydrates, proteins and fats get digested in human beings?

OR

(c) Briefly explain the role of large intestine in human beings.