

PT-2/HALF YEARLY EXAMINATION, 2022-23

SCIENCE

Time - 7:15 AM to 10:20 AM

Class – X

M.M. : 80

Date – 09.09.2022 (Friday)

Name of the student _____ Section _____

General Instructions:

- Question paper comprises three sections – A, B and C.
- There are 30 questions in the question paper. All questions are compulsory.
- **Section A** – Question no.1 to 12 – all questions or part thereof are of one mark each. These questions comprise multiple choice questions (MCQ), very short answer type questions (VSA), Assertion-Reason type questions.
- Q.No. 13 & 14 are case based questions carrying 4 marks each.
- **Section B** – Question no.15 to 24 are short answer type questions, carrying 3 marks each.
- **Section C** – Question no. 25 to 30 are long answer type questions, carrying 5 marks each.
- There is no overall choice in the question paper. However, an internal choice has been provided in some questions in each section.
- In addition to this, separate instructions are given with each section and question, wherever necessary.

SECTION A - OBJECTIVE TYPE QUESTIONS

- Q1. Linear magnification (m) produced by a rear-view mirror fitted in vehicles (1)
- (a) is less than one. (b) is more than one.
(c) is equal to one. (d) can be more than or less than one depending upon the position of object
- Q2. Which colour suffer least deviation on passing through a prism? (1)
- (a) Red (b) Violet (c) Indigo (d) Blue
- Q3. The danger signals installed at the top of tall building are red in colour. These can be seen from a distance because among all other colours, the red light - (1)
- (a) is scattered the most by smoke or fog. (b) is scattered the least by smoke or fog.
(c) is absorbed the most by smoke or fog. (d) moves fastest in air.

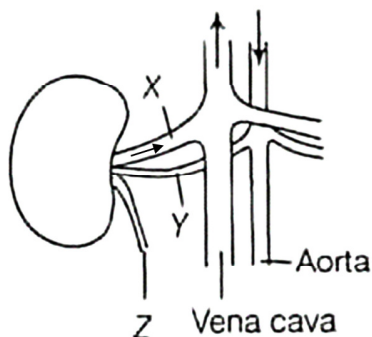
OR

The focal length of the eye lens increases when eye muscles

- (a) are relaxed and lens becomes thinner. (b) contract and lens becomes thicker.
(c) are relaxed and lens becomes thicker. (d) contract and lens becomes thinner.

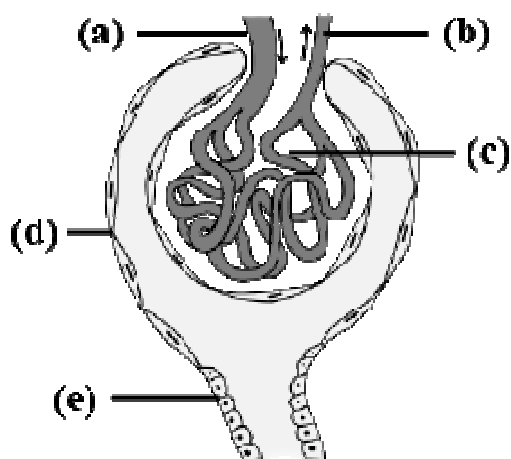
Q4. In the figure given below, the structures marked are associated with human kidney.
X in the given diagram is -

(1)



- (a) Renal artery (b) Renal vein (c) Right kidney (d) Left kidney

OR

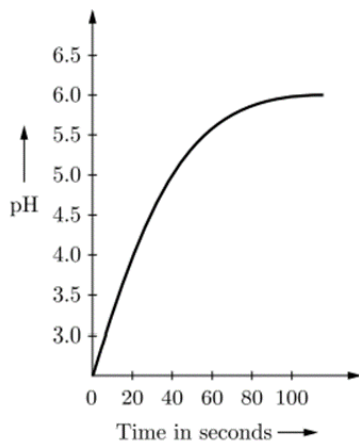


Choose the correct label for part 'C' in the above diagram -

- (A) Afferent arteriole (B) Efferent arteriole (C) Glomerulus (D) Collecting duct

Q5. Mr. Ashok assumed that the time taken for 10 cm³ of CO₂ to be formed from a reaction between equal volume of acid solutions and 1.0 g of calcium carbonate is affected by the pH of acid solution. Mr. Rajesh tested his hypothesis and represented his results as shown in the graph. What will happen at pH 6.5?

(1)



- (a) No reaction
 (b) Reaction occurs very fast
 (c) Slow reaction
 (d) CO₂ will evolve.

Q6. Which plant hormone promotes cell division?

(1)

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

Q7. Which of the following statement(s) is (are) true about respiration? (1)

- (i) During inhalation, ribs move inward and the diaphragm is raised.
- (ii) In the alveoli, exchange of gases takes place i.e. oxygen from alveolar air diffuses into blood and carbon dioxide from the blood into alveolar air sacs.
- (iii) Haemoglobin has a greater affinity for sulphur dioxide than oxygen.
- (iv) Alveoli help in increasing surface area for the exchange of gases.

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

Instructions for question no. 8 and 9 (Assertion Reason type)

Direction : The following question consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (a) Both Assertion and Reason are true and Reason is the 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 the Reason is false.
- (d) Both Assertion and Reason are false.

Q 8. **Assertion :** The process of dissolving an acid in water is a highly exothermic. (1)

Reason : A large amount of heat is absorbed in endothermic reaction.

Q9. **Assertion :** The main organ of human excretory system are kidneys. (1)

Reason : Kidneys perform the function of removing excess water and nitrogenous wastes from the body.

Q10. What should be the position of the object, when a concave mirror is to be used: (1)

- (i) As a shaving mirror.
- (ii) In torches producing parallel beam of light.

Q 11. In the Fig. given below(A) contains an organic acid and (B) is a component of fertilisers. Identify the strength of the chemical substance on the basis of pH. (1)



(A)



(B)

Q12. Why the walls of trachea are supported by cartilaginous rings? (1)

CASE BASED QUESTIONS :

- Q13. Thousands of chemical reactions takes place during digestion. Enzyme amylase present in saliva breaks down sugars and carbohydrates present in food to form simpler forms which the body can absorb. Hydrochloric acid in the stomach reacts with food to further break it down. So during digestion, proteins break into amino acids, fats break into fatty acids and glycerol and carbohydrates break into simple sugars.
- A. Name the type of reaction when quick lime combines with water. (1)
- B. What is the name and colour of chemical compound when copper powder is heated? (1)
- C. Mention two observations when ferrous sulphate crystals are heated in china dish? (1)
- D. A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved. (1)
- Q14. Hormones are the chemical messengers secreted in very small amounts by specialised tissues called ductless glands. They act on target tissues/organs usually away from their source. Hormones are produced in the endocrine glands. Hormone is mainly composed of protein. Hormones assist the nervous system in control and co-ordination. Nerves do not react to every nook and corner of the body and hence hormones are needed to affect control and coordination in those parts. Unlike animals, plants do not have a nervous system. Plants use chemical means for control and co-ordination. Many plant hormones are responsible for various kinds of movements in plants. Movements in plants can be divided into two main types : Tropic movement and Nastic movement.
- A) Low secretion of the growth hormone causes which of the following disease? (1)
- (i) Diabetes (ii) Gigantism (iii) Dwarfism (iv) Hepatitis C
- B) Roots of plants are: (1)
- (i) positively geotropic. (ii) negatively geotropic.
(iii) positively phototropic. (iv) None of these.
- C) Which of the following endocrine glands is unpaired? (1)
- (i) Adrenal (ii) Testes (iii) Pituitary (iv) Ovary
- D) Which statement is not true about thyroxin? (1)
- (i) Iron is essential for the synthesis of thyroxin.
(ii) It regulates carbohydrates, protein and fat metabolism in the body.
(iii) Thyroid gland requires iodine for synthesis of thyroxin.
(iv) Thyroxin is also called thyroid hormone.

SECTION B - SUBJECTIVE QUESTIONS

- Q15. (a) State Snell's law of refraction of light. (3)
- (b) 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 slightly. Draw a labelled ray diagram to illustrate it.
- Q16. If a man's face is 25cm in front of shaving mirror producing erect image 1.4 times the size of the face, then find the focal length of the mirror used. (3)

Q17. Why do stars twinkle while planets do not? (3)

OR

How can we recombine the components of white light after a glass prism has separated them? Illustrate it by drawing a diagram.

Q18. a) What is dispersion of white light?
b) "Rainbow is an example of dispersion of sunlight." Justify this statement by explaining with the labelled diagram, the formation of a rainbow in the sky. (3)

Q19. a) While constructing a house, a builder selects marble table top for the Kitchen where vinegar, lemon juice & tamarind used for cooking are to be kept. Will you agree to this selection? Explain. (3)

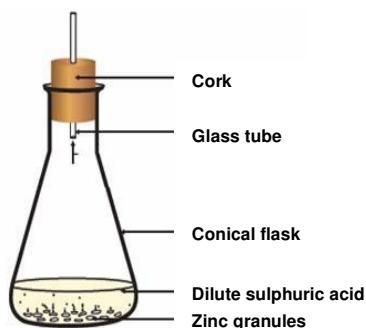
b) While diluting an acid, why is it recommended that acid should be added to water and not water to acid?

OR

a) A compound 'X' of sodium is commonly used for making crispy pakoras. It is also used for curing acidity in the stomach. Write the formula and chemical name of X. State the reaction which takes place when it is heated.

b) A compound P forms the enamel of teeth. It is the hardest substance of the body. It doesn't dissolve in water but gets corroded when the pH is lowered below 5.5. Identify the compound P and its formula.

Q20. In a schematic diagram for the preparation of hydrogen gas as shown in the figure. What would happen if the following changes are made? (3)

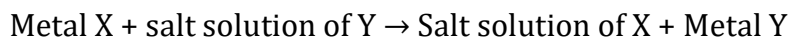


a. In place of Zinc granules, same amount of Zn dust is taken in test tube.

b. In place of dilute sulphuric acid, dil. Hydrochloric acid is added.

c. Sodium hydroxide is taken in place of dilute sulphuric acid and the flask is heated.

Q21. When a metal X is added to salt solution of metal Y, the following chemical reaction takes place. (3)



Mention the inference you draw regarding the reactivity of metal X and Y. Identify the type of reaction. State the reason of your conclusions.

Q22. What happens at the synapse between two neurons? (3)

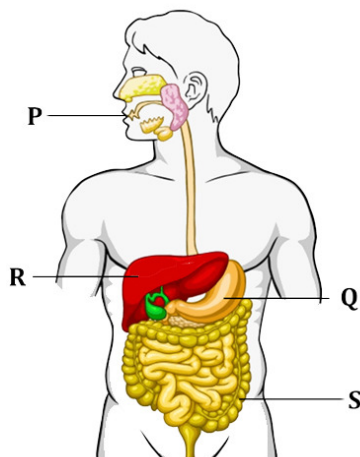
Q23. a) Ventricles have thicker muscular walls than atria. Give reason. (1+2)

b) Veins have valves whereas arteries do not. Give reason.

OR

Explain double circulation in human beings.

- Q24. a) Write the name of juice secreted by part **R** and write one important role of it. (3)



- b) Write complete equation of photosynthesis.
c) Explain the significance of peristaltic movement that occurs all along the gut during digestion.

SECTION C- SUBJECTIVE

- Q25 a) Define absolute refractive index of a medium. (5)

b) You are given three different media.

A($n=1.5$), B($n=1.7$), and C ($n=1.31$).

In which of these does light travel fastest.

c) Light enters from air to flint glass having refractive index 1.65. What is the speed of light in dense flint glass? The speed of light in vacuum is 3×10^8 m/s.

OR

A spherical mirror produces an image of magnification ($m = -1$) on a screen placed at a distance of 50 cm from the mirror.

- a) Write the type of mirror.
b) Find the distance of the image from the object.
c) What is the focal length of the mirror?

- Q 26. a) The far point of myopic person is 80 cm in front of the eye. What is the nature and power of the lens required to correct the problem? (5)

b) Ritu needs a lens of power $-2D$ for correction of her vision.

- (i) What kind of defect in vision is she suffering from?
(ii) What are the possible causes of this defect?
(iii) What is the nature of corrective lens?

- Q27. a. Write one example each with chemical equation for decomposition reaction taking place in presence of heat, light and electricity. (5)

b. Which of the following statement is correct and why? Also mention chemical equation.

STATEMENT-Copper displaces silver from silver nitrate solution or silver displaces copper from copper sulphate solution.

Q28. State the reason for the following statements: (5)

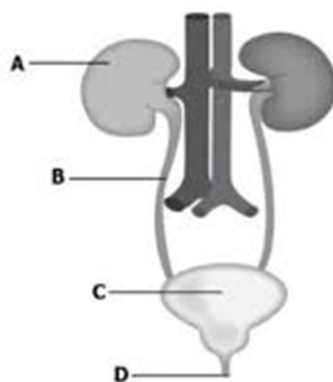
- a) Tap water conducts electricity whereas distilled water does not.
- b) Dry hydrogen chloride gas does not turn blue litmus red whereas dil. Hydrochloric acid does
- c) During summer season, a milkman usually adds a very small amount of baking soda to fresh milk.
- d) Ammonia is a base although it does not contain hydroxyl group.
- e) Farmers treat the soil with quick lime.

OR

The metal salt is blue in colour. When salt 'A' is heated strongly over a burner, then a substance 'B' present in it is eliminated and a white powder 'C' is left behind. When a few drops of a liquid 'D' is added to powder 'C', it becomes blue again.

- a) Identify A, B, C and D.
- b) Write the chemical equation involved and the type of reaction.
- c) Give an example of the salt which also shows the above property.

Q.29 a) Label the diagram given below and write the role of part B. (5)



b) Write two excretory products in plants and their methods of excretion.

Q.30 a) Write role of cerebellum, Pons and medulla of hind brain. (5)

b) What is role of PERIPHERAL NERVOUS SYSTEM in our body?

OR

- a) Write the one important role of cerebrum of forebrain.
- b) How does our body respond when adrenaline is secreted into the blood?
- c) Label the following parts '2 and 5' and write the role of part '2'.

