Pratap Public School, Karnal

Mid-Term Examination (2023)

Class - X

Subject - Science

Time : 3 Hrs **M.M : 80**

Name ..... **Roll No.** ..... **Section** .....

General Instructions:-

i) All questions are compulsory.

ii) The question paper consists of three sections A, B and C.

iii) Section A is physics (25 marks), Section B chemistry (25 marks) and Section C is Biology (30 marks)

iv) Each section consists of 1 mark , 2 marks , 3 marks , 4 marks and 5 marks questions.

v) Marks are indicated against each question.

vi) Internal choices have been given in each section.

(SECTION-A) PHYSICS (25 MARKS)

1. The mirror which always forms erect image and is of same size is
   a) concave
   b) convex
   c) plane
   d) any of these
2. Far point of eye is at
   a) 25 m
   b) 50m
   c) 25cm
   d) Infinity
3. The laws of reflection hold good for
   a) plane mirror only
   b) concave mirror only
   c) convex mirror only
   d) all mirrors irrespective of their shape
4. When light rays enter the eye, most of the refraction occurs at the
   a) crystalline lens
   b) outer surface of the cornea
   c) iris
   d) pupil
5. The two statements are given one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to the question from the codes (a), (b), (c) and (d) as given below
   a) Both A and R are true and R is correct explanation of the assertion.
   b) Both A and R are true but R is not correct explanation of the assertion.
   c) A is true but R is false.
   d) A is false but R is true

   Assertion (A) : Rainbow is formed at the same side of the sun.

   Reason (R) : Rainbow is formed by dispersion of sunlight by tiny water droplets, present in the atmosphere.

6. Name the type of mirror used in the following situations:
   a) Headlights of car
   b) Rear-view mirror of a vehicle.
   Support your answer with reason.

OR

Light enters from air to glass having refractive index 1.50. What is speed of light in glass? (2)

7. Draw ray diagrams to describe the nature, position and size of image formed by a
   a) Convex lens for the object placed at $2F_1$
   b) concave lens for the object when it is placed between infinity and optical centre of the lens. (3)
   (3)
8. Why do stars twinkle but planets do not?
9. The far point of a myopic person is 80 cm in front of the eye. What is the nature and power of lens required to correct the problem?

OR

A student has difficulty in reading the blackboard white sitting in the last row. What could be the defect the child is suffering from. State two causes of this defect. With the help of a labelled ray diagram, show how it can be corrected. (3)

10. An object 4.0cm in size, is placed 25cm in front of a concave mirror of focal length 15cm.
    i) At what distance from the mirror should a screen be placed in order to obtain a sharp image?
    ii) Find the size of the image.
    iii) Draw a ray diagram to show the formation of image in this case. (5)

OR

    i) Define principal focus of a spherical mirror.
    ii) For what position of on object does a concave mirror forms a real, inverted and diminished image of the object. Draw the ray diagram.
    iii) An object 4 cm high is placed at the distance of 6cm in front of concave mirror of focal length 12cm. Find the position of the image formed.

11. Our atmosphere is a heterogeneous mixture of minute particles, which include air molecules, tiny water droplets, smoke particles ,etc. When a light beam strikes such fine particles, the path of the beam becomes visible. The light reaches us after being reflected by these particles. The phenomenon of scattering of light by the colloidal particles give rise to Tyndall effect. Tyndall effect can also be observed when sunlight passes through a canopy of a dense forest.
    i) Which of the following cannot give rise to scattering of light? (1)
       a) suspended dust particles
       b) air molecules
       c) colloidal solution
       d) homogeneous transparent liquid
    ii) What is Tyndall effect? (1)
    iii) Why does the sky appear dark instead of blue to an astronaut? (2)

(SECTION-B) (CHEMISTRY) (25 MARKS)

1. Which is true about oxidation
   a) it involves addition of oxygen
   b) it involves removal of hydrogen
   c) it involves loss of electron
   d) all are true
2. Farmers neutralise the effect of acidity of the soil by adding. (1)
   a) slaked lime
   b) gypsum
   c) caustic soda
   d) baking soda
3. Which one of the following metal does not react with cold as well as hot water? (1)
   a) K
   b) Ca
   c) Mg
   d) Fe
4. When zinc metal reacts with sodium hydroxide solution on heating the gas evolved . (1)
   a) Turns lime water milky
   b) supports combustion
   c) burns with a pop sound
   d) has a pungent order
5. A solution has pH value 5. To this solution 1 ml of dilute hydrochloric Acid is added. Now the pH of the solution will be (1)
   a) more than 5
   b) less than 5
   c) seven only
   d) the same only
6. Chemically rust is (1)
   a) Hydrated ferrous oxide
   b) Hydrated ferric oxide
   c) Only ferric oxide
   d) none of these
7. "Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate". (1)
   a) Translate the above statement into a balanced chemical equation.
   b) State the two types in which the above reaction can be purified.

   OR

   a) Name the law which is kept in mind while balancing a chemical equation.
   b) Oxidation and Reduction process occur simultaneously. Justify the statement with the help of example.
8. a) Why does an aqueous solution of an acid conduct electricity? (1)
   b) What would you observe on adding dilute hydrochloric acid to sodium bi carbonate placed in a test tube? (1)
9. Dry pellets of base 'X' when kept in open absorb moisture and turns sticky. The compound is also formed by chlor-Alkali process. Write the chemical name and formula of 'X'. Describe chlor-Alkali Process with balanced chemical equation. Name the type of reaction that occurs when X is treated with dilute Hydrochloric Acid. Write the chemical equation. (3)
10. a) Draw a neat and labelled diagram required for the purpose of electro refining. (1½)
    b) Write the reaction taking place at cathode and anode during the electrorefining of copper.

    OR

    A metal E is stored under kerosene, when a small piece of it is left open in air, it catches fire. When the product formed is dissolved in water it turns red litmus blue.

i) Name the metal E. (1)

ii) Write the chemical equation for the reaction when it is exposed in air and when the product is dissolved in water. (2)

11. a) Write the chemical reactions taking place when

i) Manganese dioxide is heated with Aluminium Powder.

ii) Steam is passed over red not iron.

iii) Magnesium reacts with hot water.

b) The oxide X_2O_3 is unaffected by water. Explain a method by which metal X can be obtained from its ore. (3+2)

12. The reaction between carbon dioxide and lime water which is a base, it reacts with carbon dioxide to produce salt and water. Since this is similar to the reaction between a base and an acid, we can conclude that nonmetallic oxides are acidic in nature.

Based on the above paragraph answer the following questions :

i) What is the nature of carbon dioxide? (1)

ii) Give another reaction of non-metallic oxide and a base. (1)

iii) Write the complete reaction between calcium hydroxide and carbon dioxide with physical states. (2)

OR

Write the balanced chemical reaction between Aluminium oxide and Sodium oxide. (2)

(SECTION-C) (BIOLOGY) 30 MARKS

1 Select the correct option (1×7=7)

i) The opening and closing of stomatal pore depends upon

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

ii) The blood leaving the tissues becomes rich in

a) Carbon Dioxide
b) Haemoglobin
c) Water
d) Oxygen

iii) Heterotrophs

a) do not synthesise their own food
b) utilise solar energy for photosynthesis
c) synthesis their own food
d) are capable of converting carbon dioxide and water into carbohydrates

iv) Spinal cord originates from

a) Cerebrum
b) Medulla
c) Pons
d) Cerebellum

v) In Rhizopus tubular thread like structures bearing sporangia at their tips are called

a) Filaments
b) Hyphae
c) Rhizoids
d) Roots

vi) In the questions given below, two statements are given, one is Assertion and the other is Reason. Choose the correct answer to the question from the codes A, B, C and D.

Assertion - Intelligence and memory are located in fore brain.

Reason - Centres of speech and sight occur in mid brain

(A) (B)

(C) (D)

vii) Assertion - Carpel is present in the centre of the flower.

Reason - It gets pollinated by direct contact with the stamens.

(A) (B)

(C) (D)

2. Answer briefly to the following questions. **(2×4)**

i) a) What is the function of glomerulus?

b) On what two factors selective reabsorption of water takes place in tubular part of nephron.

ii) Give the function of

a) Aorta b) Pulmonary artery

c) Pulmonary vein d) Vena Cava

iii) What is the difference between reflex action and walking.

iv) Draw labelled diagram's showing binary fission in amoeba.

3. Explain : **(2×3=3)**

i) a) Difference between aerobic and anaerobic respiration.

OR

Explain the role of following enzymes in digestion.

a) Amylase

b) Trypsin

c) Lipase

ii) How does our body respond when adrenaline is secreted into the blood.

4. Read the paragraph and answer the following questions.

You must have seen green threads of pea plants coiling around the support and help the shoot to climb up the support. They are tendrils. A young tendril performs circular movements. When it comes in contact with a support, it coils around it. The coiling is caused by decreased presence of auxin in the region of contact and concentration of auxin on the free side coiling of tendrils is a tropic movement in response to stimulus of contact. It is called thigmotropism. (4)

i) What is tropic movement?

OR

Which hormone is secreted on the free sides of pea plant?

ii) Define thigmotropism.

iii) How does tendril come in contact with its support?

iv) What mechanism operates in coiling of tendril around a support?

5. Explain in detail. (5×1=5)

a) What is reflex arc? Explain with the help of a diagram.

b) Explain the different parts of the brain with their function.

OR

a) Explain hydrotropism with an experiment. Also draw diagram to explain the answer.

b) Explain the role of

i) Insulin

ii) Thyroxine

iii) Cytokinin

iv) Oestrogen

v) Ethylene

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