



Class X

SESSION : 2023-2024

SUBJECT: SCIENCE

Maximum Marks: 50 Marks

Time Allowed: 1hours45 min

General Instructions:

- i. This question paper consists of 30 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 5 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 2 Short Answer type questions carrying 03 marks each. Answer to these Questions should in the range of 50 to 80 words
- vi. Section D consists of 2 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 1 source-based/case-based units of assessment of 04 marks each with sub-parts
- viii. Use of any electronic gadgets during exams are strictly prohibited.

Section A

Q1) Anita added a drop each of diluted acetic acid and diluted hydrochloric acid on pH paper and compared the colors. Which of the following is the correct conclusion?

- (a) pH of acetic acid is more than that of hydrochloric acid.
- (b) pH of acetic acid is less than that of hydrochloric acid.
- (c) Acetic acid dissociates completely in aqueous solution.
- (d) Acetic acid is a strong acid

Q2) In the redox reaction



- (a) MnO_2 is reduced to MnCl_2 & HCl is oxidized to H_2O
- (b) MnO_2 is reduced to MnCl_2 & HCl is oxidized to Cl_2
- (c) MnO_2 is oxidized to MnCl_2 & HCl is reduced to Cl_2
- (d) MnO_2 is oxidized to MnCl_2 & HCl is reduced to H_2O

Q3) Magnesium ribbon is rubbed before burning because it has a coating of

- (a) basic magnesium carbonate
- (b) basic magnesium oxide
- (c) basic magnesium sulphide
- (d) basic magnesium chloride

Q4) When Ag is exposed to air it gets a black coating of

- (a) AgNO_3
- (b) Ag_2S
- (c) Ag_2O
- (d) Ag_2CO_3

Q5) When hydrogen chloride gas is prepared on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to

- (a) absorb the evolved gas
- (b) moisten the gas
- (c) absorb moisture from the gas
- (d) absorb Cl^- ions from the evolved gas

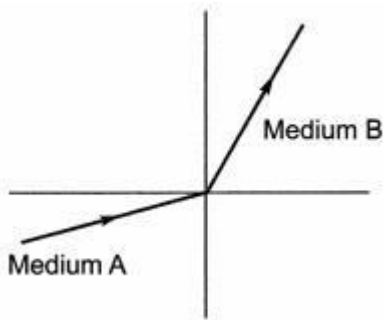
Q6) Brine is an aqueous solution of sodium hydroxide

- (a) aqueous solution of sodium carbonate
- (b) aqueous solution of sodium chloride
- (c) aqueous solution of sodium bicarbonate
- (d) Non of these

Q7) At what temperature is gypsum heated to form Plaster of Paris?

- (a) 90°C
- (b) 100°C
- (c) 110°C
- (d) 120°C

Q8) A light ray enters from medium A to medium B as shown in figure. The refractive index of medium B relative to A will be



- (a) greater than unity
- (b) less than unity
- (c) equal to unity
- (d) zero

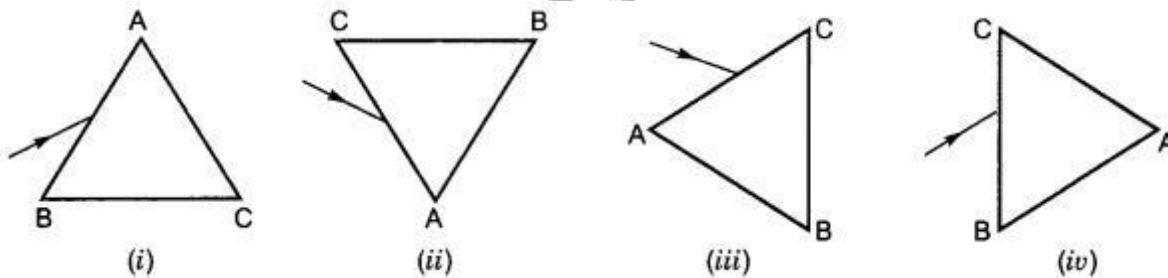
Q9) Magnification produced by a rear view mirror fitted in vehicles

- (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 the object in front of it.

Q10) A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.

- (a) Plane, convex and concave
- (b) Convex, concave and plane (c) Concave, plane and convex
- (d) Convex, plane and concave

Q11) A prism ABC (with BC as base) is placed in different orientations. A narrow beam of white light is incident on the prism as shown in the Figures given below. In which of the following cases, after dispersion, the third colour from the top corresponds to the colour of the sky?



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

Q12) Which of the following statements is correct regarding the propagation of light of different colours of white light in air? (a) Red light moves fastest.

- (b) Blue light moves faster than green light.
- (c) All the colours of the white light move with the same speed.
- (d) Yellow light moves with the mean speed as that of the red and the violet light.

Q13) The bluish colour of water in deep sea is due to (a) the presence of algae and other plants found in water

- (b) reflection of sky in water
- (c) scattering of light
- (d) absorption of light by the sea

Q14) The mode of nutrition found in fungi is:

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

Q15) Name a circulatory fluid in the human body other than blood. (a)

Platelets

- (b) RBC
- (c) Lymph
- (d) Plasma

Q16) Posture and balance of the body is controlled by

- (a) Pons
- (b) Medulla oblongata
- (c) Cerebellum
- (d) Cerebrum

Q. no 17 to 20 are Assertion - Reasoning based questions.

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

- (a) Both A and R are true and R is the correct explanation of A
- (b) Both A and R are true and R is not the correct explanation of A
- (c) A is true but R is false
- (d) A is False but R is true

Q17) Assertion: Silver bromide decomposition is used in black and white photography.

Reason: Light provides energy for this exothermic reaction.

Q18) Assertion: Amphibians can tolerate mixing of oxygenated and deoxygenated blood.

Reason: Amphibians are animals with two chambered heart

Q19) Assertion: The effect of auxin hormone on the growth of root is exactly opposite to that on a stem.

Reason : Auxin hormone increases the rate of growth in root and decreases the rate of growth in stem.

Q20) Assertion : Copper sulphate crystals are wet because it contains water of crystallisation.

Reason: Water of crystallisation is the fixed number of molecules of water present in one formula unit of salt.

Section B

Q21) With the help of an example explain what happens when a base reacts with a non-metallic oxide. What do you infer about the nature of non-metal oxide?

Q22) (a) State the law that is followed by balancing a chemical equation.

(b) Balance the following chemical equation: $\text{Na} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$

Q23) State the location and function of gastric glands.

Q24) If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a labelled ray diagram to support your answer.

Q25) State the function of each of the following parts of human eye: (i)

Cornea

(ii) Iris

Section C

Q26) 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.

Q27) Complete and balance the following chemical equations :

(i) $\text{NaOH}_{(\text{aq})} + \text{Zn}_{(\text{s})} \rightarrow$

(ii) $\text{CaCO}_{3(\text{s})} + \text{H}_2\text{O}_{(\text{l})} + \text{CO}_{2(\text{g})} \rightarrow$

(iii) $\text{HCl}_{(\text{aq})} + \text{NaOH}_{(\text{aq})} \rightarrow$

Section D

Q28) spherical mirror produces an image of magnification -1 on a screen placed at a distance of 40 cm from the mirror. (i) Write type of mirror.

(ii) What is the nature of the image formed?

(iii) How far is the object located from the mirror?

(iv) Draw the ray diagram to show the image formation in this case

Q29) student is unable to see clearly the words written on the blackboard placed at a distance of approximately 4 m from him. Name the defect of vision the boy is suffering from. Explain the method of correcting this defect. Draw ray diagram for the

(i) defect of vision and also (ii)

for its correction

(iii) find focal length of lens

Section E

Q30) **case study -1** Plaster of Paris

On heating gypsum at 373 K, it loses water molecules and becomes calcium sulphate hemihydrate ($\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$). This is called Plaster of Paris. Plaster of Paris is a white powder and on mixing with water, it changes to gypsum once again giving a hard solid mass.

Water of crystallisation is the fixed number of water molecules present in one formula unit of a salt. Five water molecules are present in one formula unit of copper sulphate. Chemical formula for hydrated copper sulphate is $\text{Cu SO}_4 \cdot 5\text{H}_2\text{O}$. Now you would be able to answer the question whether the molecule of $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ is wet.

Answer the following questions on the basis of the above paragraph:

- i) What is the molecular formula of gypsum?
- ii) Write the equation of formation of plaster of paris by heating gypsum?
- iii) What does this 2 denotes in $\text{CaSO}_4 \cdot 2 \text{H}_2\text{O}$?
- iv) What are the uses of Plaster of Paris?

