

Mock Test – 2 (CBSE)

Time: 3 Hrs

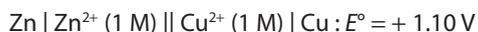
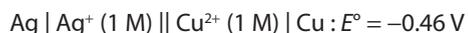
Max. Marks: 70

General Instructions

1. All questions are compulsory.
2. Question numbers 1 to 8 are very short answer questions and carry 1 mark each.
3. Question numbers 9 to 18 are short answer questions and carry 2 marks each.
4. Question numbers 19 to 27 are also short answer questions and carry 3 marks each.
5. Question numbers 28 to 30 are long answer questions and carry 5 marks each.
6. Use log tables if necessary, use of calculators is not allowed.

1. All the vitamins of group B are required in regular diet except for vitamin B₁₂. Why? (1)
2. What type of point defect occurs in the crystal of zinc sulphide? (1)
3. Give the IUPAC name of the following organic compound :
$$\begin{array}{c} \text{CH}_3\text{CH}=\text{C}-\text{CH}-\text{CH}_3 \\ | \quad | \\ \text{CH}_3 \quad \text{Br} \end{array}$$
 (1)
4. An element E crystallizes in body-centred cubic structure. If the edge length of the cell is 1.469×10^{-10} m and the density is 19.3 g cm^{-3} , calculate the atomic radius of this element. (1)
5. What type of ketones undergo iodoform test? (1)
6. Define the term "order of reaction" for chemical reactions. (1)
7. What is the difference between order of a reaction and its molecularity? (1)
8. What does the abbreviation TNT stand for? (1)
9. A potential difference of 20 V applied to the ends of a column of M/10 AgNO₃ solution, 4 cm in diameter and 12 cm in length gave a current of 0.20 A. Calculate the specific and molar conductivities of the solution. (2)
10. Explain the following terms:
(a) Emulsification
(b) Chemisorption (2)
11. Give chemical tests to distinguish between
(a) Phenol and benzyl alcohol.
(b) Butan-2-ol and 2-methylpropan-2-ol. (2)
12. Taking two examples of heterogeneously catalytic reaction, explain how a heterogeneous catalyst helps in the reaction. (2)
13. Molar conductance of a 1.5 M solution of an electrolyte is found to be 138.9 S cm^2 . What would be the specific conductance of this solution?
OR
Depict the galvanic cell in which the reaction $\text{Zn(s)} + 2\text{Ag}^+(\text{aq}) \longrightarrow \text{Zn}^{2+}(\text{aq}) + 2\text{Ag(s)}$ takes place. Further indicate what are the carriers of current inside and outside. State the reaction at each electrode. (2)
14. How are the following conversions carried out?
(a) Benzyl chloride to benzyl alcohol.
(b) Ethylmagnesium chloride to propan-1-ol.
(c) Propene to propan-2-ol.
(d) Methylmagnesium bromide to 2-methylpropan-2-ol. (2)
15. H₃PO₃ is diprotic acid. Explain. (2)
16. What is osmotic pressure and how is it related with the molecular mass of non-volatile solute? (2)
17. What are reducing and non-reducing sugars? Give examples. (2)
18. What are homopolymers and copolymers? Can homopolymers be of addition as well as condensation type? Give some examples to justify your answers. (2)
19. An organic compound (A) with molecular formula C₃H₆O is not readily oxidized. It gives on reduction C₃H₈O (B) which on reaction with HBr gives a bromide (C). Grignard reagent obtained from (C) reacts with (A) to give C₆H₁₄O (D). Identify the compounds from (A) to (D). (3)
20. Calculate the average volume available to a molecule in a sample of nitrogen gas at STP. What is the average distance between neighboring molecules if a nitrogen molecule is assumed to be spherical? (3)
21. Describe the principle of extraction of each of the following:
(a) Sn from SnO₂
(b) Zn from ZnO
(c) Cr from Cr₂O₃ (3)
22. Describe actions of the following with suitable examples or state an example each and function of the following:
(a) Tranquillizers
(b) Broad-spectrum antibiotics
(c) Antipyretics
(d) Antiseptics (3)

23. The emf (E^\ominus) of the following cells are



Calculate the emf of the cell :



24. (a) Nitrogen does not form pentahalides. Explain.
 (b) HF is a low boiling liquid, whereas HCl, HBr and HI are gases.
 (c) H_3PO_3 is a diprotic acid. Why?

OR

- (a) Why is electron gain enthalpy of chlorine more negative than fluorine?
 (b) Why are zero group elements inert?
 (c) Why are bonds in PCl_5 not equivalent? (3)

25. Convert the following:

- (a) Ethanol to ethyl ethanoate.
 (b) Ethanol to ethoxyethane.
 (c) Methanol to ethanol.

OR

How can phenol be converted into

- (a) Benzene
 (b) Phenetole
 (c) Picric acid
 (d) Phenolphthalein
 (e) Aspirin (3)

26. Define the terms:

- (a) Elastomers
 (b) Fibers
 (c) Thermoplastic polymers
 (d) Thermosetting plastics (3)

27. Define the following terms in relation to protein:

- (a) Glycosidic linkage
 (b) Peptide linkage
 (c) Polypeptides
 (d) Denaturation of protein (3)

28. Briefly classify the types of ligands on the basis of their ligating ability. (3)

29. Benzene (C_6H_6) and toluene (C_7H_8) form nearly an ideal solution. At 313 K, the vapor pressure of pure liquids are benzene, 160 mm Hg and toluene, 60 mm Hg. Assuming an ideal behavior, calculate the partial pressure of benzene and toluene, and the total pressure of the solution prepared by

- (a) mixing benzene and toluene in a mole ratio of 2:3.
 (b) mixing equal molecules of benzene and toluene.
 (c) mixing equal masses of benzene and toluene. (5)

30. Explain why carboxylic acids behave as acids? Discuss briefly the effect of electron-donating and electron withdrawing substituents on the acidity of aliphatic carboxylic acids.

OR

Discuss briefly the oxidation and reduction reactions of aldehydes and ketones. (5)

31. When a crystalline compound (A) is heated with acidified potassium dichromate, a reddish brown gas (B) is evolved, which on passing in the NaOH solution gives a yellow colored solution (C). This solution on neutralization with acetic acid and on subsequent addition of lead acetate gives a yellow precipitate (D). When (A) is heated with NaOH solution, a colorless pungent gas is evolved. On passing this gas in K_2HgI_4 solution, a reddish brown ppt. (E) is formed. Identify A to E. write the sequence of the reactions involved. (5)