Padasalai’s 12th Study Material

STD: XII FULL PORTION-2 TIME:3.00 MARKS:150

I. Choose and write the correct answer

1. Ethyl alcohol cannot be used as a solvent for CH₃MgI because
   a) CH₃MgI reacts with alcohol giving methane
   b) The reaction between them is explosive in nature
   c) CH₃MgI is converted to C₂H₅MgI
   d) alcohol is immiscible with CH₃MgI

2. Which of the following nitro-compounds behave as an acid in the presence of strong alkali?
   a) CH₃MgI reacts with alcohol giving methane
   b) The reaction between them is explosive in nature
   c) CH₃MgI is converted to C₂H₅MgI
   d) alcohol is immiscible with CH₃MgI

3. Conversion of benzene diazonium chloride to chlorobenzene is called
   a) Sandmeyer’s reaction
   b) Stephan’s reaction
   c) Gomberg reaction
   d) Schotten-Baumann reaction

4. Proteins are
   a) polypeptides
   b) polyacids
   c) polyphenols
   d) polyesters

5. Oxidation of glycerol with bismuth nitrate gives
   a) Meso-oxalic acid
   b) Glyceric acid
   c) Tartronic acid
   d) Both (b) and (c)

6. According to Lewis concept of acids and bases, ethers are
   a) Neutral
   b) Acidic
   c) Basic
   d) Amphoteric

7. Curd is a colloidal solution of
   a) Liquid in liquid
   b) Liquid in solid
   c) Solid in liquid
   d) Solid in solid

8. An emulsion is a colloidal solution of
   a) Two solids
   b) Two gases
   c) Two liquids
   d) Solid and liquid

9. The laws of electrolysis were enunciated first by
   a) Dalton
   b) Faraday
   c) Kekule
   d) Avogadro

10. The change of entropy for the process H₂O(lq)→H₂O(vap) involving ΔH = 40850Jmol⁻¹ at 373 K is
    a) 120 Jmol⁻¹ K⁻¹
    b) 9.1 x 10⁻³ J mol⁻¹ K⁻¹
    c) 109.52 J mol⁻¹ K⁻¹
    d) 9.1 x 10⁻³ J mol⁻¹ K⁻¹

11. In an adiabatic process which of the following is true?
    a) q = w
    b) q = 0
    c) ΔE = q
    d) PΔV = 0

12. For the homogenous gas reaction at 600 K, 4NH₃(g) + 5O₂(g) ⇌ 4NO(g) + 6H₂O(g) the equilibrium constant Kc has the unit
Note: Answer any seven questions choosing at least two questions from each section: 7x5=35

PART – I

Section - A

52. Explain the formation of O₃ molecule by molecular orbital theory.
53. Explain how dichromate is extracted from its chromite ore.
54. Explain the position of Lanthanum in periodic table.
55. Explain the postulates of Werner’s theory.

Section - B

56. Define Trouton’s rule. What are the substances that deviate from this rule.

57. Derive the expressions for Kc and Kp for decomposition of PCl₅.

58. Distinguish between simple and complex reactions.

59. Calculate the E.M.F. of the zinc - silver cell at 25°C when [Zn²⁺] = 0.001M and [Ag⁺] = 0.1 M (E° cell at 25°C = 1.56 volt)

**Section - C**

60. Give any three methods of preparation of diethyl ether.

61. Explain the mechanism of cannizaro reaction.

62. Explain the reactions of CH₃CONH₂ with:
   i) P₂O₅,  ii) Br₂/NaOH,  iii) hydrolysis by an acid.

63. Explain briefly on characteristics of rocket propellants.

**PART - IV**

Note: i) Question number 70 is compulsory and answer any three from the remaining questions:

   ii) Answer four questions in all.

   4x10=40

64. a) Explain Pauling scale to determine electro negativity.
   b) Describe in detail how noble gases are isolated from air?

65. a) [Cu (NH₃)₄] is square planar, where as [NiCl₄]²⁻ is tetrahedral. Explain.
   b) Explain the use of radioactive isotopes in the study of reaction mechanism.

66. a) Explain the nature of glass.
   b) Write briefly about the preparation of colloids by dispersion methods.

67. a) Derive Henderson equation.
   b) Write the IUPAC conventions of representation of a Cell.

68. a) Explain optical isomerism involved in tartaric acid.
   b) What happens when lactic acid is (i) treated with dilute H₂SO₄  ii) added to PCl₅,  iii) oxidised with alkaline KMnO₄  iv) oxidized with Fenton’s reagent

69. a) Write any three methods of preparation benzylamine
   b) Show the formation of a peptide bond with an equation.

70. a) An organic compound A of molecular formula C₂H₆O on treatment with PCl₅ gives compound B. Compound B reacts with KCN to give a compound C of molecular formula C₃H₅N which undergoes acid hydrolysis to give compound D which on treatment with Soda lime gives a hydrocarbon. Identify A, B, C and D and explain the reactions.
   b) An elements (A) belonging to group 6 and is silvery white in colour. Red hot (A) decomposes steam liberating hydrogen and forming (B). (A) also reacts with conc. Sulphuric acids forming C with evolution of SO₂. Identify A, B and C. explain the two reactions.

   (OR)

   c) An aromatic aldehyde (A) of molecular formula C₇H₆O which has the smell of bitter almonds on treatment with (CH₂CO)₂O and CH₂COONa to give compounds (B) which is an aromatic unsaturated acid. (A) also reacts with (A) in the presence of alc. KCN to give dimmer (C). Identify (A), (B) and (C) Explain the reactions.

   d) Ionic conductance’s at infinite dilution of Al³⁺ and SO₄²⁻ are 189 ohm⁻¹cm²gm-equiv⁻¹ and 160 ohm⁻¹cm²gm-equiv⁻¹. Calculate equivalent and molar conductance of the electrolyte at infinite dilution.