CHEMISTRY

41) Which method is used to get very pure germanium used in semiconductor?

(A) vapour - phase refining

(B) electrolysis

(C) liquation

(D) zone - refining

42) Which product will be obtained in the following reaction?

Reaction : $P_{4(s)} + 3NaOH_{(aq)} + 3H_2O_{(l)} \rightarrow$

(A) $PH_{3(g)} + 3NaH_2PO_{2(aq)}$

(B) $PH_{3(g)} + 3Na_2HPO_{2(aq)}$

(C) $2PH_{3(g)} + 3Na_2HPO_{2(aq)}$

(D) $2PH_{3(g)} + 3NaH_2PO_{2(aq)}$

43) The molecular formulae for phosgene and tear gas are _____ and _____ respectively.

(A) $COCl_2$ and CCl_2NO_2

(B) $SOCl_2$ and CCl_2NO_2

(C) $COCl_2$ and CCl_3NO_2

(D) $SOCl_2$ and CCl_3NO_2

44) Which of the following mixture is called Aquaregia?

(A) Three parts of dil. HCl and 1 part of conc. HNO_3

(B) Two parts of conc. HCl and two parts of conc. HNO_3

(C) Three parts of conc. HCl and 1 part of dil. HNO_3

(D) Three parts of conc. HCl and 1 part of conc. HNO_3

(Space for Rough Work)

45) Which of the following is allylic halide?

(A) (1 - bromo ethyl) benzene

(B) Benzyl chloride

(C) 1 - bromo benzene

(D) 3 - chloro cyclo hex-1-ene

46) 50% of the reagent is used for dehydrohalogenation of 6.45 gm CH_3CH_2Cl. What will be the weight of the main product obtained?

[At. mass of H, C and Cl are 1, 12 & 35.5 gm/mole^{-1} respectively]

(A) 1.4 gm

(B) 0.7 gm

(C) 2.8 gm

(D) 5.6 gm

47) Name the following reaction $CH_3CH_2Cl + NaI \xrightarrow{\text{acetone}} CH_3CH_2I + NaCl$

(A) Frinkel-stein reaction

(B) Swartz reaction

(C) Wurtz reaction

(D) Hell-Volhard Zelinsky reaction

48) Which reagent is used for bromination of methyl phenyl ether?

(A) Br_2 / CH_3COOH

(B) Br_2 / Red P

(C) Br_2 / $FeBr_3$

(D) HBr / Δ

(Space for Rough Work)

49) Which of the following acid does not have –COOH group?

(A) Picric acid
(B) Ethanoic acid
(C) Benzoic acid
(D) Salicylic acid

50) Which of the following statement is not correct?

(A) Phenol is neutralised by sodium carbonate
(B) Phenol is used to prepare analgesic drugs
(C) Solubility of phenol in water is more than that of chlorobenzene
(D) Boiling point of o-nitrophenol is lower than that of p-nitrophenol

51) Total order of reaction $X + Y \rightarrow XY$ is 3. The order of reaction with respect to X is 2. State the differential rate equation for the reaction.

(A) $-\frac{d[X]}{dt} = K[X]^0[Y]^3$
(B) $-\frac{d[X]}{dt} = K[X]^3[Y]^0$
(C) $-\frac{d[X]}{dt} = K[X]^2[Y]$
(D) $-\frac{d[X]}{dt} = K[X][Y]^2$

52) $X \xrightarrow{\text{Step-I}} Y \xrightarrow[\text{slow}]{\text{Step-II}} Z$ is a complex reaction. Total order of reaction is 2 and Step - II is slow step. What is molecularity of Step-II?

(A) 2
(B) 1
(C) 3
(D) 4

(Space for Rough Work)

53) Reaction $3ClO^- \rightarrow ClO_3^- + 2Cl^-$ occurs in following two steps.

(i) $ClO^- + ClO^- \xrightarrow{K_1} ClO_2^- + Cl^-$ (Slow step)

(ii) $ClO_2^- + ClO^- \xrightarrow{K_2} ClO_3^- + Cl^-$ (Fast step)

then the rate of given reaction = _____.

(A) $K_1[ClO^-]$

(B) $K_1[ClO^-]^2$

(C) $K_2[ClO_2^-][ClO^-]$

(D) $K_2[ClO^-]^3$

54) At given temperature and pressure adsorption of which gas of the following will take place the most?

(A) Di oxygen O_2

(B) Di hydrogen H_2

(C) Ammonia NH_3

(D) Di nitrogen N_2

55) Which type of colloid is the dissolution of sulphur (S_8)?

(A) Micelle

(B) Associated colloid

(C) Multimolecular colloid

(D) Macromolecular colloid

56) For Adsorption phenomenon,

(A) ΔH = –ve, ΔS = +ve

(B) ΔH = +ve, ΔS = –ve

(C) ΔH = –ve, ΔS = –ve

(D) ΔH = +ve, ΔS = +ve

(Space for Rough Work)

57) Which of the following statement is incorrect for $KMnO_4$?

(A) It is used as antiseptic.

(B) It is an oxidising agent.

(C) It is used as bleaching agent in textile industries.

(D) It is dark purple coloured amorphous substance.

58) Which of the following ion has the maximum theoretical magnetic moment?

(A) Cr^{3+} (B) Fe^{3+}

(C) Ti^{3+} (D) Co^{3+}

59) Which of the following oxide has the maximum basicity?

(A) Pr_2O_3 (B) La_2O_3

(C) Sm_2O_3 (D) Gd_2O_3

60) Which of the following spectrochemical series is true?

(A) $SCN^- < F^- < NH_3 < en < CO$

(B) $SCN^- < NH_3 < F^- < en < CO$

(C) $SCN^- < F^- < en < NH_3 < CO$

(D) $SCN^- < F^- < en < CO < NH_3$

(Space for Rough Work)

61) Which of the following complex is paramagnetic?

(A) $[Co(NH_3)_6]^{3+}$ (B) $[Ni(CO)_4]$

(C) $[Ni(CN)_4]^{2-}$ (D) $[NiCl_4]^{2-}$

62) Both $[Ni(CO)_4]$ and $[Ni(CN)_4]^{2-}$ are diamagnetic. The types of hybridisation of Ni in these complexes are _____ & _____ respectively.

(A) sp^3, dsp^2 (B) sp^3, sp^3

(C) dsp^2, sp^3 (D) dsp^2, dsp^2

63) Which of the following order of acidic strength is not correct?

(A) $CH_3 \cdot CH_2 \cdot \underset{\displaystyle Cl}{\underset{|}{CH}} \cdot COOH > CH_3 \cdot \underset{\displaystyle Cl}{\underset{|}{CH}} \cdot CH_2 \cdot COOH > CH_2 \cdot CH_2 \cdot \underset{\displaystyle Cl}{\underset{|}{CH_2}} \cdot COOH$

(B) $Cl_3 \cdot C \cdot COOH > Cl_2 \cdot CH \cdot COOH > Cl \cdot CH_2 \cdot COOH$

(C) $H \cdot COOH > CH_3COOH > C_6H_5COOH$

(D) $CH_3COOH > CH_3 \cdot CH_2 \cdot COOH > (CH_3)_2 \cdot CH \cdot COOH$

64) What is the formula of Acrolein?

(A) $CH_2 = CH - CN$

(B) $CH_2 = CH - CHO$

(C) $CH_2 = CH - COOH$

(D) $CH_2 = CH - CONH_2$

(Space for Rough Work)

65) What is IUPAC name for isophthalic acid?

(A) Benzene - 1, 2 dicarboxylic acid

(B) Benzene - 1, 3 dicarboxylic acid

(C) Benzene - 1, 4 dicarboxylic acid

(D) Benzene - 1, 5 dicarboxylic acid

66) What is the name for red azo dye?

(A) β - napthyl azo benzene

(B) p - hydroxy azo benzene

(C) p - amino azo benzene

(D) p - N, N dimethyl amino azo benzene

67) Which of the following is not formed by Sandmayer reaction?

(A) C_6H_5I (B) C_6H_5Cl

(C) C_6H_5Br (D) C_6H_5CN

68) For which vitamin liver is not the source?

(A) Vitamin - B_2 (B) Vitamin - B_1

(C) Vitamin - B_{12} (D) Vitamin - H

(Space for Rough Work)

69) In which of the following compound, all the monosaccharide units are not joined by $C_1 - O - C_4$ chain.

(A) Lactose (B) Maltose

(C) Cellulose (D) Amylopectin

70) Which of the following polymer is formed by cationic addition polymerisation reaction?

(A) Poly styrene (B) Butyl rubber

(C) Teflon (D) PVC

71) Which of the following polymer is used in pigment?

(A) Neoprene (B) Buna - S

(C) Teflon (D) Orlon

72) To prevent food from spoilage by microorganism, which substance is used?

(A) Arneto (B) Aspartame

(C) Salt of sorbic acid (D) Tetrazine

(Space for Rough Work)

73) Which of the following defect is seen in FeO?

(A) Metal deficiency defect

(B) Metal excess defect

(C) Displacement defect

(D) Impurity defect

74) Which of the following substance possess antiferromagnetic property?

(A) CrO_2 (B) Fe_3O_4

(C) H_2O (D) MnO

75) The boiling points for aqueous solutions of sucrose and urea are same at constant temperature. If 3 gm of urea is dissolved in its 1 litre solution, what is the weight of sucrose dissolved in its 1 litre solution?
[Urea - 60 gm/mole, sucrose = 342 gm/mole]

(A) 17.1 gram (B) 3.0 gram

(C) 6.0 gram (D) 34.2 gram

76) Which option is inconsistant for Raoult's law?

(A) The change in heat of dilution for solution = 0

(B) Volume of liquid solvent + volume of liquid solute = volume of solution.

(C) Solute does not undergo association in solution

(D) Solute undergoes dissociation in solution

(Space for Rough Work)

77) Which colligative property is more useful to determine the molecular weight of the substances like proteins and polymers?

(A) Elevation in boiling point

(B) Lowering of vapour pressure

(C) Depression of freezing point

(D) Osmotic pressure

78) The resulting solution obtained at the end of electrolysis of concentrated aqueous solution of NaCl _____.

(A) turns blue litmus into red

(B) turns red litmus into blue

(C) remains colourless with phenolphthalein

(D) the colour of red or blue litmus does not change

79) The value of E^{o}_{red} for metal A, B and C are 0.34 Volt, –0.80 Volt and –0.46 Volt respectively. State the correct order for their ability to act as reducing agent.

(A) A > B > C

(B) C > B > A

(C) B > C > A

(D) C > A > B

80) Two electrolytic cells containing molten solutions of Nickel chloride & Aluminium chloride are connected in series. If same amount of electric current is passed through them, what will be the weight of Nickel obtained when 18 gm of Aluminium is obtained? (Al - 27 gm/mole, Ni - 58.5 gm/mole $^{-1}$)

(A) 117 gm

(B) 58.5 gm

(C) 29.25 gm

(D) 5.85 gm

(Space for Rough Work)