LPS Aditi Dua XII - B

FIRST TERM EXAMINATION 2017– 2018
CLASS XII – CHEMISTRY

Time allowed: 3 hours MM 70

General Instructions

All questions are compulsory. Q1 to Q5 are very short answer questions carrying 1 mark each. Q6 to Q10 are short answer questions carrying 2 marks each. Q11 to Q22 are also short answer questions, carrying 3 marks each. Q23 is value based question of 4 marks. Q24 to Q26 are long answer questions carrying 5 marks each. Use Log Tables if necessary.

Q1 Write down the IUPAC nomenclature of Ph – CH = CH – CHO.

Q2 What is tincture of iodine? What is its use?

Q3 Write down preparation of Nylon6.

Q4 Find $\Lambda_M^0 Al_2(SO_4)_3$ given $\Lambda_M^0 Al^{3+} = 30 scm^2 mol^{-1}$ $\Lambda_M^0 SO_4^{2-} = 40 scm^2 mol^{-1}$

Q5 Why 1M urea solution and 1M NaCl are not isotonic?

Q6 Convert

a) Ethanal → 3–hydroxyl butanal b) Toluene → Benzaldehyde

Q7 Complete the reaction

a) $C_6H_5NO_2 \xrightarrow[HCl]{Fe} A \xrightarrow[0°-5°]{HNO_2} B$ b) $CH_3COOH \xrightarrow[\Delta]{NH_3} A \xrightarrow{NaOBr} B$

Q8 Write short notes on

a) Reimer Tiemann reaction b) Williamson's synthesis

Q9 Explain –

a) Alkyl halide though polar are insoluble in water

b) Out of $C_6H_5CH_2Cl$, $C_6H_5CH(C_6H_5)Cl$ which one gets hydrolysed easily?

Q10 What is mass of Ni deposited during electrolysis of $Ni(NO_3)_2$ by passage of 3 ampere current for 2 hours? At. Wt of Ni = 58

Q11 Explain the terms with examples (two)

a) Broad spectrum antibiotic b) Tranquiliser c) Antacids

Q12 Write down preparation of following polymers

a) Nylon 6,6 b) Buna – N c) Orlon

Q13 a) What are amoners? Draw structure of α, β–D glucose.

b) Why amino acids are amphoteric?

c) What type of bond hold nucleotide together in polynucleotide strand?

Q14 Find vapour pressure of solution formed by dissolving 8g of $MgCl_2$ in 200g of water if vapour pressure of pure water is 760mm Hg. At weight Mg=24, Cl=35.5

OR

Find osmotic pressure of solution formed by dissolving 4g of KCl in water to form 500ml of solution at 27°C. At wt K=39, Cl=35.5

Q15 a) Differentiate fibrous and globular protein.

b) Write down chemical reaction of D–glucose with HCN, conc $HNO_3$

c) Explain structure of starch.

Q16 Find emf of following cell at 298K

$Al \mid Al^{3+}(0.01M) \parallel Cu^{2+}(0.01M) \mid Cu$

Given $E^{\circ}Al^{3+} / Al = -0.3V$ $E^{\circ}Cu^{2+} / Cu = +0.34V$

Q17 Find edge length of CCP solid having density $8g/cm^3$ with molar mass of 64g. Also calculate radius of atom.

Q18 A column of .05M $CH_3COOH$ solution having length of 50cm and diameter 0.05cm offers resistance of 500Ω, find

a) Specific resistance
b) Specific conductivity and molar conductivity
c) Find degree of dissociation. Given $\Lambda^0_M CH_3COONa = 800 scm^2 mol^{-1}$

$\Lambda^0_M NaCl = 600 scm^2 mol^{-1}$ $\Lambda^0_M HCl = 1000 scm^2 mol^{-1}$

Q19 a) Explain with example positive and negative deviation from Raoulf's law.
b) What are azeotropic mixtures? What type of azetropic mixture is rectified spirit?

Q20 a) Name artificial sweetner used at high temperature and low temperature.
b) Why sodium bicarbonate is avoided as antacid?
c) Name a biodegradable polymer.

Q21 a) Find molarity of 63% $HNO_3$ aqueous solution of density 1.69g/ml $MMHNO_3$=63
b) Find vapour pressure of $C_6H_6$ and $C_7H_8$ in solution formed by dissolving equal number of $C_6H_6$, $C_7H_8$ molecules in ideal solution. Given V.P. of pure $C_6H_6$, $C_7H_8$ are 700mm Hg, 600mm Hg at 27°C respectively.

Q22 Explain
a) Coupling reaction
b) Gabriel phthalimide synthesis
c) Cannizzaro reaction

Q23 Shanti, a domestic helper of Mrs Anuradha, fainted while mopping the floor. Mrs Anuradha immediately took her to nearby hospital where she was diagnosed to be severely anaemic. The doctor prescribed an iron rich diet and multivitamin supplement to her. Mrs Anuradha supported her financially to get medicine. After a month Shanti was diagnosed to be normal.
a) What values are displayed by Mrs Anuradha?
b) Name vitamins whose deficiency causes pernicious anaemia.
c) Give an example of water soluble vitamin.

Q24 Explain
a) Pkb of aniline is more than methylamine.
b) Ethalamine is soluble in water whereas aniline is not.
c) Methylamine in water reacts with $FeCl_3$ to precipitate hydrated ferric oxide.
d) Aniline does not undergo Friedelcraft reaction.
e) Gabriel phthalimide synthesis is preferred for synthesis of primary amine/.

OR

Convert
a) Aniline → P-bromoaniline
b) Nitromethane → Dimethylamine
c) Benzoic acid → aniline
d) Aniline → 1,3, 5 tribromobenzen
e) Benzyl chloride →2 – phenyl ethanamine

Q25 a) Complete reaction with mechanism $CH_3–CHO \xrightarrow[NaOH]{HCN}$

b) Write all possible products of $CH_3CHO + CH_3–CH_2–CHO \xrightarrow[NaOH]{dil}$

c) Why reaction of aldehyde, ketone is done with ammonia and it derivative in carefully controlled pH medium?

OR

a) Why carboxylic acid is a stronger acid than phenol?
b) Compare reactivity of aldehyde, ketone towards nucleophilic addition reaction.
c) Convert
   i) Propanoic acid → Propenoic acid
   ii) Benzene→ p-bromobenzaldehyde
   iii) ethanenitrile → ethane

Q26 a) Synthesise following ethers using Williamson's synthesis methoxy propane, anisole
b) Arylhalide do not undergo nucleophilic substitution reaction easily. (4 reasons)
c) What are ambident nucleophile? Give two examples.

OR

a) Complete reaction with mechanism $nBuBr \xrightarrow[ethanol]{KCN}$

b) Convert
   i) Phenol → 1,3,5 tribromo benzene
   ii) But–1–ene → Butan –1–al
   iii) Ethanal → Butane–1,3–diol