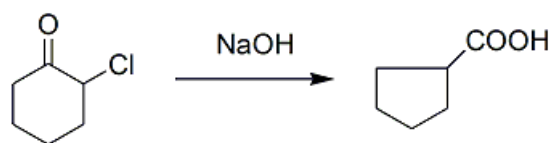


Time: One Hour

Max. Marks: 50

Instruction : Attempt any 40 questions

- 1 The number of wave passing through the point in one minute is called as ....
- (A)Wavelength (B)Frequency (C)Wave number (D)Amplitude
- 2 The unit of wave number is
- (A)cm (B)nm (C) $\text{cm}^{-1}$  (D)Hz
- 3 What is a red shift?
- (A)The shifting of an absorption to shorter wavelength (B)The shifting of an absorption towards the blue end of the spectrum (C)The shifting of an absorption to lower energy (D)The shifting of an absorption to higher energy
- 4 In UV Spectroscopy molecule undergoes
- (A)Electronic transition (B)Nuclear spin resonance (C)Bond vibration (D)All of the above
- 5 The vibrations in which the distance between the two atoms increases or decreases is...
- (A)Stretching (B)Bending (C)Rocking (D)Wagging
- 6 Which compound would be expected to show intense IR absorption at  $2250 \text{ cm}^{-1}$ ?
- (A) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CO}_2\text{H}$  (B) $(\text{CH}_3)_2\text{CHCN}$  (C) $\text{CH}_3\text{CH}_2\text{CH}_2\text{CONH}$  (D) $(\text{CH}_3)_2\text{CHCH}_2\text{OH}$
- 7 Fingerprint region in infrared spectroscopy is lies between .....  $\text{cm}^{-1}$
- (A)1500 - 4000 (B)600 - 1500 (C)600 - 4000 (D)None of Above
- 8 Ethanol shows how many types of NMR signal
- (A)Two (B)Three (C)One (D)Zero
- 9 Nuclei having either the number of proton or neutrons as odd have \_\_\_\_\_ spin
- (A)Zero spin (B)Half integral spin (C)Positive spin (D)None of these
- 10 What do you expect in NMR Spectrum of  $\text{CH}_3\text{CH}_2\text{Br}$ ?
- (A)A doublet and a quartet (B)A doublet and a triplet (C)A quartet and a triplet (D)Two doublet
- 11 Ethyl amine gives .....NMR signals
- (A)3 (B)2 (C)4 (D)1
- 12 Cyclobutane contain .....equivalent set of protons.
- (A)2 (B)3 (C)1 (D)4
- 13 Due to shielding effect, proton absorbed at
- (A)Higher magnetic effect (B)Lower magnetic effect (C)Does not effect on magnetic effect (D)None of these
- 14 Hydrogen nuclei of benzene molecule is
- (A)Shielded (B)Deshielded (C)Both (D)None
- 15 The double bond unit (DBE) of organic compound having molecular formula  $\text{C}_2\text{H}_4\text{O}_2$  is
- (A)1 (B)2 (C)3 (D)4
- 16 The isoelectric point of a amino acid is
- (A)The pH at which the amino acids molecule has no charges on its surface (B)The pH at which a amino acid in solution has an equal number of positive and negative charge (C)The electric charge isothermal conditions (D)None of these
- 17 Glycine is a unique amino acid because it
- (A)Cannot form a peptide bond (B)Has a sulphur containing R group (C)Has no chiral carbon (D)Is a essential amino acid
- 18 Which of the following compounds form zwitter ion
- (A)Carbonyl compound (B)Amino acids (C)Heterocyclic compounds (D)Phenols
- 19 The peptide linkage is formed by interaction of
- (A)Two carboxylic group (B)Two amino group (C)Carboxylic and amino group (D)Two carbonyl group
- 20 While naming peptide, the names of the constituent amino acids are written from:
- (A)C-terminal to N-terminal (B)N-terminal to C-terminal (C)N-terminal to N-terminal (D)C-terminal to C-terminal
- 21 Pinacol - Pinacolone rearrangement is an example of
- (A)Electrophilic rearrangement (B)Nucleophilic rearrangement (C)Free radical rearrangement (D)Aromatic rearrangement
- 22 The following reaction is an example of



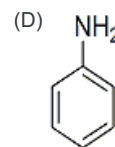
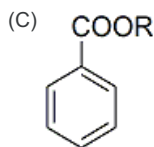
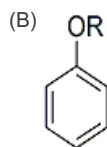
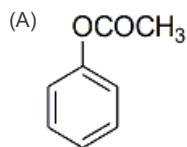
(A) Pinacol – Pinacolone rearrangement

(B) Fries rearrangement

(C) Stevens rearrangement

(D) Favorskii rearrangement

23 Which of the following gives photo Fries rearrangement?



24 Stevens rearrangement is an example of

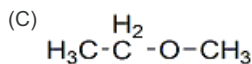
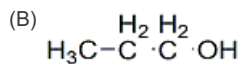
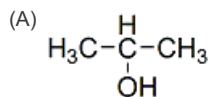
(A) Electrophilic rearrangement

(B) Nucleophilic rearrangement

(C) Free radical rearrangement

(D) Aromatic rearrangement

25 The structure of compound having molecular formula  $C_3H_{10}O$  and three PMR signals: doublet (6H,  $\delta$  1.3), septet (1H,  $\delta$  3.9), singlet (1H,  $\delta$  5.5)



(D) All of these

26

(A) HCl

(B) HBr

(C) HI

(D)  $O_2$

27 Tetramethylsilane (TMS) gives \_\_\_ NMR signal

(A) 1

(B) 2

(C) 3

(D) 4

28 Complexes containing only paired electrons are known as ...

(A) Paramagnetic

(B) Diamagnetic

(C) Ferromagnetic

(D) Antiferromagnetic

29 The complexes formed by the use of (n-1)d orbitals are called as..

(A) Low Spin complexes

(B) High spin complexes

(C) Spin free complexes

(D) None of these

30 Which of the following is paramagnetic.

(A)  $Sc^{3+}$

(B)  $Zn^{2+}$

(C)  $Cu^+$

(D)  $Mn^{2+}$

31 In CFT the interaction between the metal ion and ligand is...

(A) 50% ionic & 50% Covalent

(B) 100% Covalent

(C) 100% ionic

(D) 80% ionic & 20% Covalent

32 In CFT, if ligands are neutral, these are called

(A) Negative point charge

(B) Point dipoles

(C) Both A & B

(D) None of these

33 In every free metal ion, the five degenerate d-orbitals have

(A) Lower energy

(B) Higher energy

(C) Intermediate energy

(D) Same energy

34 The energy difference between  $t_{2g}$  and  $e_g$  orbital is known as ...

(A) Crystal field splitting

(B) Crystal field stabilization energy

(C) Distortion

(D) None of these

35 In an Octahedral complex, the CFSE for  $d^4$  configuration in a weak field ligand is..

(A)  $-4 Dq$

(B)  $-8 Dq$

(C)  $-12 Dq$

(D)  $-6 Dq$

36 Select the incorrect matching of a complex species with its shape

(A)  $[AgCl_2]^-$  Linear

(B)  $[Fe(CN)_6]^{4-}$  Octahedral

(C)  $[Ni(CN)_6]^{2+}$  Tetrahedral

(D)  $[BF_4]^-$  Tetrahedral

37 An electron transition occurs from one ligand orbital to another ligand orbital are found in...

(A) d-d transition

(B) Ligand to metal charge transition

(C) Metal to Ligand charge transition

(D) Intra ligand transitions

38 Ground state term for  $d^2$  configuration is

(A)  $^3F$

(B)  $^3P$

(C)  $^1G$

(D)  $^1S$

39 Which of the following is strong field ligand?

(A)  $Br^-$

(B)  $Cl^-$

(C)  $I^-$

(D)  $CN^-$

40 Ground state term for  $d^5$  configuration is

(A)  $^6S$

(B)  $^4F$

(C)  $^2D$

(D)  $^3P$