

CG-11-2020

WINTER EXAM 2020

Subject Name : RB-01_CHEMISTRY - Organic Chem- Inorganic Chemistry – XIV (CBCS) A1 OR_VI

Date : 16/03/2021

Duration : 60 min. |

Instruction / सूचना / :-

* Follow the detail instructions given on OMR Sheet

* ओ एम आर वरील सर्व सूचनांचे पालन करावे.

Q.1

The unit of wavelength is

- A) Cm B) cps C) Hz D) Cm⁻¹

- A]A
- B]B

- C]C
- D]D

Which of the following has highest wavelength ?

- A) Ultra-violet light B) Infra red light
- C) X-ray D) Radio wave

Q.2

- A]A
- B]B

- C]C
- D]D

Q.3

The effect in which absorption (λ_{max}) shifted to shorter wavelength due to certain modification is called ...

- A) Bathochromic effect B) Hypochromic effect
- C) Hyperchromic effect D) Hypsochromic effect

- A]A
- B]B

- C]C
- D]D

Which of the following is not an auxochrome?

- A) - OH B) - OCH₃ C) - N(CH₃)₂ D) - NO₂

Q.4

- A]A
- B]B

- C]C
- D]D

Q.5

Functional group region in infrared spectroscopy is Lies between cm⁻¹.

- A) 1500-4000 B) 600-1500 C) 600-4000 D) None of above

- A]A
- B]B

- C]C
- D]D

Which compound would be expected to show intense IR absorption at 3300 Cm⁻¹ ?

- A) Butane B) CH₃-CH₂-C≡C-H
- C) CH₃-CH₂-CH₃ D) But - 1 - ene

Q.6

- A]A
- B]B

- C]C
- D]D

Which of the following is IR active.

- A) HC₁ B) C₂ C) N₂ D) H₂

Q.7

- A]A
- B]B

- C]C
- D]D

Q.8 Methanol shows how many types of NMR signal

- A]Two
- B]Three

- C]One
- D]Zero

Q.9 NMR is the study of absorption of by nuclei in a magnetic field.

- A]IR radiation
- B]Microwave radiation

- C]Ultra-Violet-radiation
- D]Radio frequency radiation

Q.10 What do you observed in NMR spectrum of acetophenone ?

- A]A doublet and a quartet
- B]A doublet and a triplet

- C]Two singlet
- D]Two doublet

Q.11 Ethyl bromide gives NMR signals.

- A]2
- B]1

- C]3
- D]4

Q.12 How many equivalent set of 'NMR' protons are in acetone ?

- A]1
- B]3

- C]4
- D]2

Q.13 Due to deshielding effect, proton absorbed at

- A]Higher magnetic field
- B]Lower magnetic field

- C]Does not effect on magnetic effect
- D]None of these

Q.14 Hydrogen nuclei of acetylene molecule is

- A]Shielded
- B]Deshielded

- C]Both
- D]None

The double bond unit of organic compound having molecular formula C₄H₇N is.....

- A) 0 B) 1 C) 2 D) 3

Q.15

- A]A
- B]B





- C]C
- D]D

Q.16 Upon hydrolysis protein gives

- A]Amino acids
- B]Hydroxy acids

- C]Alcohols
- D]Fatty acids

Q.17 A zwitter ion is...

- A) An ion that is positively charged in solution.
- B) An ion that is negatively charged in solution.
- Q.18 Which of the following is not an amino acid.
- A) Glycine
- B) Alanine
- Which of the following is peptide linkage ?
- Q.19 A) $-\text{CO}-\text{NH}-$ B) $-\text{COOH}$ C) $-\text{NH}_2$ D) $-\text{COOR}$
- A) A
- B) B
- C) C
- D) D
- Q.20 In synthesis of dipeptide, the reagent DCC is used for
- A) Hydrolysis
- B) Hydration
- C) Dehydration
- D) Protonation
- Q.21 Favorskii rearrangement is an example of
- A) Electrophilic rearrangement
- B) Nucleophilic rearrangement
- C) Free radical rearrangement
- D) Aromatic rearrangement
- Which intermediate carbocation is more stable in pinacol-pinacolone rearrangement ?
- Q.22 A) 1° B) 2° C) 3° D) 4°
- A) A
- B) B
- C) C
- D) D
- Identify the product of the following reaction
- $$\text{CH}_3-\overset{\text{CH}_3}{\underset{\text{OH}}{\text{C}}}-\overset{\text{CH}_3}{\underset{\text{OH}}{\text{C}}}-\text{CH}_3 \xrightarrow{\text{H}^+}$$
- A) $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}=\overset{\text{CH}_3}{\text{C}}-\text{CH}_3$
- B) $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
- C) $\text{CH}_3-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_3$
- D) $\text{CH}_3-\overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}}-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$
- Q.23 A) A
- B) B
- C) C
- D) D
- Which of the following compound gives Favorskii rearrangement.
- A) 
- B) 
- C) 
- D) 
- Q.24 A) A
- B) B
- C) C
- D) D
- Q.25 Ethyl benzene gives NMR signal
- A) 1
- B) 2
- C) 3
- D) 4
- Q.26 The absence of absorption bands near the $1600, 1580$ and 1500 cm^{-1} is proof for the absence of
- A) Aromatic ring
- B) Carbonyl group
- C) $-\text{OH}$ group
- D) Secondary amine group
- A) A
- B) B
- C) C
- D) D
- Q.27 The structure of compound having molecular formula $\text{C}_3\text{H}_8\text{O}$ and four PMR signal : triplet (3H, 81.3), Sextet (2H, 81.7), triplet (2H, 83.9), singlet (1H, 85.5)
- A) $\text{CH}_3-\overset{\text{CH}_3}{\text{C}}-\text{CH}-\text{OH}$
- B) $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{OH}$
- C) $\text{CH}_3-\text{CH}_2-\text{O}-\text{CH}_3$
- D) None of these
- A) A
- B) B
- C) C
- D) D
- Q.28 The magnitude of crystal field splitting depends on.
- A) Nature of Ligand
- B) Oxidation state of metal ion
- C) Size of d-orbital
- D) All of the above
- Q.29 All the approaching Ligands are at an equal distance from each of the d-orbital, the energy of d-orbital will..
- A) Increase by same amount
- B) decrease by same amount
- C) No change
- D) None of the above
- In octahedral complex, the CFSE for d^5 in a strong field Ligand is...
- Q.30 A) $-16 \text{ Dq} + 3p$
- B) $-20 \text{ Dq} + 2p$
- C) $-24 \text{ Dq} + 3p$
- D) $-18 \text{ Dq} + 3p$
- A) A
- B) B
- C) C
- D) D
- Q.31 The smaller value of crystal field splitting in tetrahedral complexes as compared to octahedral complex is due to.
- A) Lesser number of Ligands in octahedral field.
- B) Greater number of Ligands in octahedral field.
- C) Lesser number of Ligands in tetrahedral field.
- D) Greater number of Ligands in tetrahedral field.

- Q.32 The number of orbitals present in d-subshell is
 A) One B) Three C) Five D) Seven
- The Jahn - Teller effect is not observed in high spin complexes of
 A) d^7 B) d^8 C) d^4 D) d^9
- Q.33 A) A B) B C) C D) D
- In tetrahedral complex, CFSE for d^6 configuration is
 A) $-6 Dq + p$ B) $-12 Dq + 2p$
 C) $-6 Dq + 3p$ D) $-4 Dq + 4p$
- Q.34 A) A B) B C) C D) D
- The CFSE - $6 Dq$ observed in high spin octahedral complexes of
 A) d^2 B) d^4 C) d^6 D) d^8
- Q.35 A) A B) B C) C D) D
- Q.36 Valence bond theory has been developed by
 A) Pauling B) Bethe C) Sorenson D) Jahn - Teller
- Ground state term symbol For $2p^3$ configuration is
 A) $4S_{3/2}$ B) $3F_4$ C) $4S_1$ D) $2P_1$
- Q.37 A) A B) B C) C D) D
- Q.38 Which of the following corresponds to absorption peak of maximum wave number in $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$
 A) $4A_{2g} \rightarrow 4T_{2g}$ (F) B) $4A_{2g} \rightarrow 4T_{1g}$ (P)
 C) $4A_{2g} \rightarrow 4T_{1g}$ (F) D) $4T_{2g}$ (F) \rightarrow $4T_{1g}$ (F)
- A) A B) B C) C D) D
- Solutions of $[\text{Co}(\text{Cl})_4]^{2-}$ are deep blue because
 A) It is tetrahedral anion
 B) It has d^7 configuration
 C) It has electronic transition in blue part of spectrum
 D) None of these
- Q.39 A) A B) B C) C D) D
- The ground state term for p^6 is same for
 A) d^{10} B) d^6 C) p^3 D) d^5
- Q.40 A) A B) B C) C D) D