IIT JAM Chemistry Most Repeated Questions

Here is the list of 25 questions prepared after analysing 2023, 2024 & 2025 IIT JAM question papers that will help you prepare for IIT JAM 2026.

Subject: Organic Chemistry

Question 1:
Which of the following is the major product of the following reaction involving a methyl shift rearrangement?
(A) 2-methylbutanol
(B) 2-butanol
(C) 3-methylbutanol
(D) 1-butanol
Correct Answer: (C)

Question 2:
Which conformation of methylcyclohexane is the most stable?
(A) Half-chair
(B) Chair with methyl equatorial
(C) Boat
(D) Chair with methyl axial
Correct Answer: (B)

Question 3:
Which of the following compounds will give a positive iodoform test?
(A) Formaldehyde
(B) Acetone
(C) Ethanol
(D) 2-Butanone
Correct Answer: (B), (C), (D)

Question 4:
How many distinct singlets are expected in the ^1H NMR of 1,2,4-trimethylbenzene?
(A) 2
(B) 3
(C) 4
(D) 5
Correct Answer: (C)

Question 5:
Which of the following reactions proceeds via an SN1 mechanism?
(A) $CH_3CH_2Br + OH^- \rightarrow CH_3CH_2OH$
(B) $(CH_3)_3CBr + H_2O \rightarrow (CH_3)_3COH$

(C) $CH_3Br + CN^- \rightarrow CH_3CN$
(D) $CH_3CH_2Cl + NaOH \rightarrow CH_3CH_2OH$
Correct Answer: (B)

Question 6:
Arrange the following acids in order of increasing pKa: benzoic acid, acetic acid, chloroacetic acid
(A) Benzoic < Acetic < Chloroacetic
(B) Chloroacetic < Benzoic < Acetic
(C) Acetic < Benzoic < Chloroacetic
(D) Chloroacetic < Acetic < Benzoic
Correct Answer: (B)

Question 7:
Which of the following reactions yields 1-naphthol?
(A) Fusion of sodium salt of 1-naphthoic acid with soda lime
(B) Reduction of 1-nitronaphthalene
(C) Oxidation of 1-naphthylamine
(D) Diazotization followed by hydrolysis of 1-naphthylamine
Correct Answer: (A), (D)

Question 8:
Which product is obtained when 3° carbocation undergoes rearrangement?
(A) Primary alcohol
(B) Rearranged alcohol
(C) Ether
(D) Alkene
Correct Answer: (B)

Question 9:
Which of the following IR absorption bands corresponds to a carboxylic acid?
(A) 3300 cm^{-1} (broad)
(B) 1700 cm^{-1} (sharp)
(C) 2200 cm^{-1}
(D) 1600 cm^{-1}
Correct Answer: (A), (B)

Question 10:
What is the product formed when Cr^{3+} is oxidized with $NaBO_3$?
(A) CrO_3
(B) $Cr_2O_7^{2-}$
(C) $Cr(OH)_3$
(D) Cr^{6+}
Correct Answer: (C)

Subject: Inorganic Chemistry

Question 11:
Which of the following is Pyrosulfuric acid?
(A) $H_2S_2O_7$
(B) H_2SO_4
(C) H_2SO_3
(D) H_2S
Correct Answer: (A)

Question 12:
The geometry of $VO(acac)_2$ is:
(A) Square pyramidal
(B) Octahedral
(C) Tetrahedral
(D) Trigonal bipyramidal
Correct Answer: (A)

Question 13:
Which of the following is an ionization isomer?
(A) $[M(NH_3)_4Br_2]SCN$
(B) $[M(NH_3)_4(SCN)_2]Br_2$
(C) $[M(NH_3)_4Br(SCN)]Br$
(D) $[M(NH_3)_5Br]SCN$
Correct Answer: (A)

Question 14:
Which of the following transition metal complexes is high spin?
(A) $[Fe(H_2O)_6]^{2+}$
(B) $[Fe(CN)_6]^{3-}$
(C) $[CoF_6]^{3-}$
(D) $[Ni(H_2O)_6]^{2+}$
Correct Answer: (A), (C), (D)

Question 15:
What is the bond order of O_2^- according to MO theory?
(A) 1
(B) 1.5
(C) 2
(D) 2.5
Correct Answer: (D)

Question 16:
Which of the following diatomic species has integral bond order?

(A) N_2
(B) O_2^-
(C) F_2
(D) B_2
Correct Answer: (A), (C)

Question 17:
Which metal ion is found in carbonic anhydrase?
(A) Cu^{2+}
(B) Fe^{2+}
(C) Zn^{2+}
(D) Mn^{2+}
Correct Answer: (C)

Question 18:
The lattice energy of NaCl is calculated using:
(A) Born-Haber cycle
(B) VSEPR theory
(C) MO theory
(D) Crystal field splitting
Correct Answer: (A)

Question 19:
The number of valence electrons in $[Fe(CO)_5]$ is:
(A) 16
(B) 18
(C) 17
(D) 20
Correct Answer: (18)

Question 20:
Spin-only magnetic moment of B_2 is:
(A) 0
(B) 1.73 μB
(C) 2.83 μB
(D) 4.90 μB
Correct Answer: (C)

Subject: Physical Chemistry
Question 21:
The unit of molar conductivity is:
(A) S cm mol^{-1}
(B) S cm^2 mol^{-1}
(C) S m mol^{-1}

(D) S m^2 mol^{-1}
Correct Answer: (D)

Question 22:
Which particle has the highest zero-point energy in a 1D box of the same length?
(A) Electron
(B) Proton
(C) Neutron
(D) Alpha particle
Correct Answer: (A)

Question 23:
In Langmuir adsorption isotherm, $\theta = 0.5$ when:
(A) $P = 0$
(B) $P \rightarrow \infty$
(C) $P = 1/K$
(D) $P = K$
Correct Answer: (C)

Question 24:
Lowering of vapor pressure is proportional to:
(A) Solute volume
(B) Solvent volume
(C) Solute mass
(D) Mole fraction of solute
Correct Answer: (D)