

CUET UG 2023 Chemistry Question Paper PDF (Jun 15, 2023) (Shift 1)

- Q1.** Second most abundant element in alloy misch metal is:
- Fe
 - Ce
 - Al
 - S

- Q2.** The correct increasing order of basic strength of amine is:
- $\text{C}_6\text{H}_5\text{NH}_2 < \text{NH}_3 < \text{C}_6\text{H}_5\text{CH}_2\text{NH}_2 < \text{C}_2\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_2\text{NH}$
 - $\text{NH}_3 < \text{C}_6\text{H}_5\text{NH}_2 < \text{C}_6\text{H}_5\text{CH}_2\text{NH}_2 < \text{C}_2\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_2\text{NH}$
 - $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2 < \text{C}_6\text{H}_5\text{NH}_2 < \text{NH}_3 < \text{C}_2\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_2\text{NH}$
 - $\text{C}_2\text{H}_5\text{NH}_2 < (\text{C}_2\text{H}_5)_2\text{NH} < \text{C}_6\text{H}_5\text{NH}_2 < \text{NH}_3$

Choose the **correct** answer from the options given below:

- (A) only
- (A) and (C) only
- (A) and (B) only
- (D) only

- Q3.** Match **List-I** with **List-II**:

List-I		List-II	
(A)	Diamagnetic solid	(I)	CrO_2
(B)	Ferromagnetic solid	(II)	Fe_3O_4
(C)	Antiferromagnetic solid	(III)	NaCl
(D)	Ferrimagnetic solid	(IV)	MnO

Choose the **correct** answer from the options given below:

- (A)-(II), (B)-(IV), (C)-(I), (D)-(III)
- (A)-(III), (B)-(I), (C)-(IV), (D)-(II)
- (A)-(I), (B)-(III), (C)-(II), (D)-(IV)
- (A)-(IV), (B)-(II), (C)-(I), (D)-(III)

- Q4.** A reaction takes 30 minutes to complete 50% of the reaction and takes 45 minutes to complete 75% of the reaction. The order of the reaction is:

- First
- Second
- Third
- Zero

- Q5.** Which of the following haloalkanes reacts with aqueous KOH most easily?

- 1 - Bromobutane
- 2 - Bromobutane
- 2-Bromo-2-methyl propane
- 2-Chlorobutane

- Q6.** When dilute aqueous solution of KI (excess) is added to AgNO_3 solution, the charge on the AgI colloidal particles formed will be:

- Positive
- Negative

- Neutral
- Both positive and negative

- Q7.** $[\text{NiCl}_2(\text{PPh}_3)_2]$ is named as:
- Dichloridobis (triphenyl phosphine) nickel (II)
 - Nickel chlorido bis (triphenyl phosphine)
 - Diphenyl phosphine Nickel (II) chloride
 - Dichlorobis (Diphenyl phosphine) Nickel (II)

- Q8.** Identify transition metal complexes which are not octahedral in shape.

- $[\text{Co}(\text{NH}_3)_6]^{3+}$
- $[\text{Ni}(\text{CO})_4]$
- $[\text{CoCl}(\text{NH}_3)_5]^{2+}$
- $[\text{CoCl}_2(\text{NH}_3)_4]^+$
- $[\text{PtCl}_4]^{2-}$

Choose the **correct** answer from the options given below:

- (A) and (B) only
- (B) and (E) only
- (C) and (D) only
- (D) and (E) only

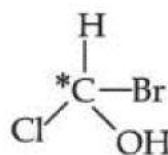
- Q9.** E_{cell} for the given cell

[Given $E^\circ_{\text{Br}_2/\text{Br}^-} = +1.09 \text{ V}$, $E^\circ_{\text{Cl}_2/\text{Cl}^-} = +1.36 \text{ V}$] at 298 K is

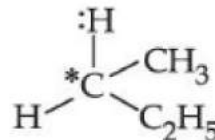
- 0.1518 V
- 0.3291 V
- 0.3882 V
- 0.2109 V

- Q10.** In which of the following molecules carbon atom marked with asterix (*) is a stereocentre or Chiral centre?

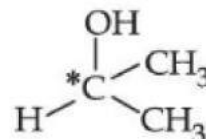
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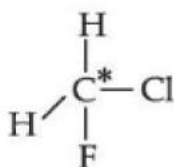
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Q11. Match List-I with List-II:

List-I		List-II	
(A)	Urease	(I)	Maltose
(B)	Maltase	(II)	Glucose and fructose
(C)	Invertase	(III)	NH ₃ and CO ₂
(D)	Diastase	(IV)	Glucose

Choose the **correct** answer from the options given below:

- (a) (A)-(III), (B)-(IV), (C)-(II), (D)-(I)
 (b) (A)-(I), (B)-(IV), (C)-(II), (D)-(I II)
 (c) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)
 (d) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Q12. Match List-I with List-II:

List-I		List-II	
(A)	Gel	(I)	Hair cream
(B)	Foam	(II)	Dust
(C)	Emulsion	(III)	Cheese
(D)	Aerosol	(IV)	Whipped cream

Choose the **correct** answer from the options given below:

- (a) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)
 (b) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)
 (c) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)
 (d) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

Q13. Match the ores in List-I with their chemical composition in List-II:

List-I		List-II	
(A)	Kaolinite	(I)	FeCO ₃
(B)	Siderite	(II)	ZnCO ₃
(C)	Malachite	(III)	[Al ₂ (OH) ₄ Si ₂ O ₅]
(D)	Colamine	(IV)	CuCO ₃ ·Cu(OH) ₂

Choose the **correct** answer from the options given below:

- (a) (A)-(IV), (B)-(III), (C)-(II), (D)-(I)
 (b) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)
 (c) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)
 (d) (A)-(III), (B)-(II), (C)-(IV), (D)-(I)

Q14. Rate of a reaction changes from $2.48 \times 10^{-3} \text{ mol}^{-1} \text{ sec}^{-1}$ to $4.96 \times 10^{-3} \text{ mol}^{-1} \text{ sec}^{-1}$ when concentration of reactant, is changed from 0.6 M to 2.4 M respectively, the order of reaction is:

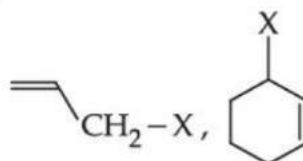
- (a) 2
 (b) zero
 (c) 0.5
 (d) 3

Q15. Ferric oxide in blast furnace's upper half is mainly reduced by:

- (a) CO
 (b) C

- (c) CO₂
 (d) H₂

Q16.



These structures represent which particular kind of halides:

- (a) Alkyl halides
 (b) Benzylic halides
 (c) Vinyl halide
 (d) Allylic halides

Q17. Which of the following compound will not undergo Azo coupling reaction?

- (a) Aniline
 (b) Phenol
 (c) Anisole
 (d) Nitrobenzene

Q18. Degree of dissociation, when molar conductivity of X at its concentration C is 24.14 and its limiting molar conductivity is 48.28 will be:

- (a) 0.3
 (b) 0.5
 (c) 0.6
 (d) 0.9

Q19. Phenol is brominated in solvent CS₂ at low temperature. The product formed are:

- (a) Monobromophenols
 (b) Dibromophenols
 (c) Tribromophenols
 (d) Tribromobenzene

Q20. Osmotic pressure of solution formed by mixing 50 ml of 0.2 M urea and 50 ml of 0.4 m glucose aqueous solution at 298 K will be : (R = 0.083 L atm K⁻¹ mol⁻¹)

- (a) 14.84 atm
 (b) 7.42 atm
 (c) 11.13 atm
 (d) 3.71 atm

Q21. Decreasing order of freezing point of 0.1 M aqueous solution of following will be:

- (A) K₄[Fe(CN)₆]
 (B) K₂SO₄
 (C) NH₂CONH₂
 (D) AlCl₃
 (E) HCl

Choose the **correct** answer from the options given below:

- (a) (A) > (D) > (B) > (E) > (C)
 (b) (A) > (D) > (B) > (C) > (E)
 (c) (C) > (E) > (B) > (D) > (A)
 (d) (E) > (C) > (B) > (D) > (A)

Q22. When blood cells are placed in 1% (w/v) NaCl aquem solution:

- (a) Cell will burst
 (b) Cell will shrink
 (c) Cell will swell

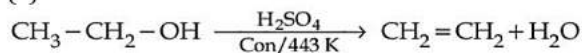
(d) Cell remains as such

Q23. A divalent ion of 'V' (Atomic no. - 23) in aqueous solution is:

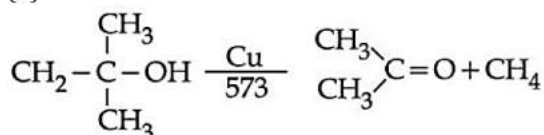
- (a) $\sqrt{24}$ BM
- (b) $\sqrt{15}$ BM
- (c) $\sqrt{12}$ BM
- (d) $\sqrt{3}$ BM

Q24. Which of the following is incorrect?

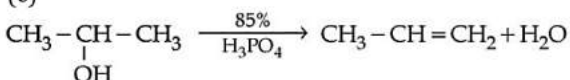
(a)



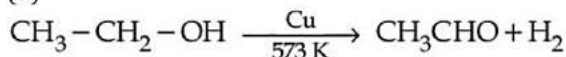
(b)



(c)



(d)



Q25. What is the packing efficiency of simple cubic lattice?

- (a) 69%
- (b) 74%
- (c) 52.4%
- (d) 80.2%

Q26. Phenol is manufactured from hydrocarbon, Cumene. Cumene is chemically:

- (a) tert. butyl benzene
- (b) Isopropyl benzene
- (c) Acetone
- (d) isopropyl alcohol

Q27. Increasing order of oxidation states of transition metal oxides will be:

- (A) TiO_2
- (B) MnO_4^-
- (C) VO_2^+
- (D) CrO_4^{2-}
- (E) $\text{Ni}(\text{CO})_4$

Choose the **correct** answer from the options given below:

- (a) (B) < (D) < (C) < (A) < (E)
- (b) (E) < (C) < (A) < (D) < (B)
- (c) (E) < (A) < (C) < (D) < (B)
- (d) (B) < (A) < (C) < (D) < (E)

Q28. Match List-I with List-II:

List-I		List-II	
(A)	Buna-S	(I)	Vinyl chloride
(B)	Neoprene	(II)	1,3-Butadiene and styrene
(C)	PVC	(III)	Tetra fluoroethene
(D)	Teflon	(IV)	Chloroprene

Choose the **correct** answer from the options given below:

- (a) (A)-(II), (B)-(IV), (C)-(III), (D)-(I)
- (b) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)
- (c) (A)-(II), (B)-(I), (C)-(IV), (D)-(III)
- (d) (A)-(II), (B)-(I), (C)-(III), (D)-(IV)

Q29. Inner orbital complex among the following is:

- (A) $[\text{Co}(\text{NH}_3)_6]^{3+}$
- (B) $[\text{COF}_6]^{3-}$
- (D) $[\text{MnCl}_6]^{3-}$
- (E) $[\text{FeF}_6]^{3-}$

Choose the **correct** answer from the options given below:

- (a) (A) and (C) only
- (b) (D) and (E) only
- (c) (B) and (C) only
- (d) (C) and (D) only

Q30. The presence or absence of hydroxyl group on which carbon atom of sugar differentiate RNA and DNA:

- (a) 2nd
- (b) 4th
- (c) 3rd
- (d) 1st

Q31. Coagulating power of an ion for a colloidal solution depends on:

- (a) Its magnitude of charge only
- (b) Its size only
- (c) Its tendency to hydrate
- (d) Its size and magnitude of charge both

Q32. Which of the following statements are correct?

- (A) Glucocorticoids control the carbohydrate metabolism
- (B) Testosterone is major female sex hormone
- (C) Insulin is released in response to increase in blood sugar
- (D) Hypothyroidism is caused by low level of thyroxine
- (E) Mineralocorticoid is major male sex hormone

Choose the **correct** answer from the options given below:

- (a) (A), (B), (C) and (D) only
- (b) (A), (C), (D) and (E) only
- (c) (A), (C) and (D) only
- (d) (C), (D) and (E) only

Q33. Which of the following sols are correctly matched with their corresponding charges?

- (A) $\text{Cr}(\text{OH})_3$ sol : negatively charged sol
- (B) TiO_2 sol : positively charged sol
- (C) CdS sol : positively charged sol
- (D) Gum : negatively charged sol
- (E) Silver sol : positively charged sol

Choose the **correct** answer from the options given below:

- (a) (C) and (E) only
- (b) (A) and (C) only
- (c) (B) and (E) only
- (d) (B) and (D) only

Q34. Match List-I with List-II:

List-I	List-II
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(A)	Antifreeze used in car engine	(I)	Phenol
(B)	Starting material for picric acid	(II)	Glycerol
(C)	Wood spirit	(III)	Ethylene glycol
(D)	By product of soap industry used in cosmetics	(IV)	Methanol

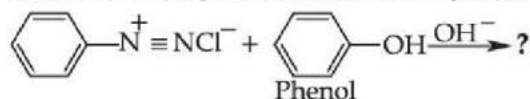
Choose the **correct** answer from the options given below:

- (a) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)
 (b) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)
 (c) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)
 (d) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

Q35. $t_{99.9\%}$ with respect to $t_{90\%}$ for a first order reaction is:

- (a) Two
 (b) One
 (c) Three
 (d) Four

Q36. Predict the major product in the following reaction



- (a) p-Aminoazobenzene
 (b) p-Hydroxyazobenzene
 (c) Sulphanilic acid
 (d) Phenol

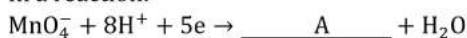
Q37. Which of the following are fat soluble vitamins:

- (A) vit A
 (B) vit B
 (C) vit D
 (D) vit E
 (E) vit K

Choose the **correct** answer from the options given below:

- (a) (A), (B), (D) and (E) only
 (b) (A), (B), (C) and (D) only
 (c) (A), (C), (D) and (E) only
 (d) (B), (C), (D) and (E) only

Q38. In a reaction:



A stands for:

- (a) Mn^{3+}
 (b) Mn^{4+}
 (c) Mn^{2+}
 (d) Mn^+

Q39. If we use molten NaCl, the products of electrolysis are

- (a) H_2 gas and Cl_2 gas
 (b) NaOH and Cl_2 gas
 (c) H_2O and Cl_2 gas
 (d) Sodium metal and Cl_2 gas

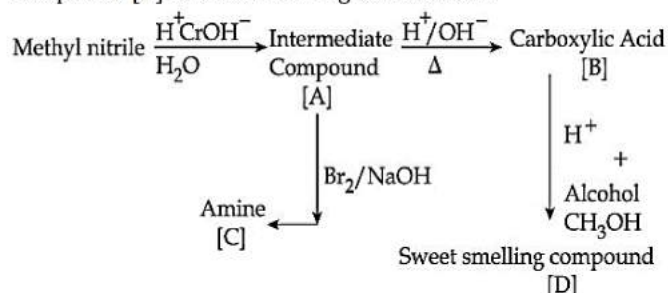
Q40. Which statement is not true for a detergent molecule?

- (a) It is not biodegradable
 (b) It is a surface active agent
 (c) It has a non-polar organic part and a polar non organic part

(d) It is sodium salt of fatty acid

Direction for the question 41 to 45: Question is based on following passage:

Methyl nitrile is hydrolysed to carboxylic acid in the presence of H^+ or OH^- as catalyst. An intermediate compound [A] is formed during this reaction.



Q41. The intermediate compound [A] is:

- (a) Methyl isocyanide
 (b) Ethyl amine
 (c) Ethan amide
 (d) Methanamide

Q42. Converting [A] into [C] is called:

- (a) Ammonolysis
 (b) Hoffmann Degradation Reaction
 (c) Carbylamine reaction
 (d) Gabriel phthalamide reaction

Q43. The sweet smelling compound [D] is:

- (a) Acid anhydride
 (b) Acyl halide
 (c) Aldehyde
 (d) Ester

Q44. What is not true regarding compound [B]?

- (A) They are higher boiling liquids than aldehydes and ketones due to extensive H Bonding
 (B) They are soluble in Benzene
 (C) They produce alkane when heated with soda lime
 (D) Produces CO_2 when treated with NaHCO_3

Choose the **correct** answer from the options given below:

- (a) (A) and (B) only
 (b) (A) and (C) only
 (c) (B) only
 (d) (A) only

Q45. Which of the following is the correct statement for hybridization of C-atom and number of σ and π bonds in the Carbonyl group?

- (a) Sp^2 , 3 σ , 1 π
 (b) Sp , 3 σ , 1 π
 (c) Sp^3 , 3 σ , 1 π
 (d) Sp^2 , 2 σ , 2 π

Direction for the question 46 to 50: Question is based on following passage:

p-block elements are placed in groups 13 to 18 of the periodic table. Group 15 is nitrogen family. Nitrogen makes various compounds like NH_3 , HNO_3 , N_2O , NO_2 etc. Phosphorus exists in the form of white and red phosphorus. White phosphorus glows in dark. PH_3 gas is used as smoke screen. Group 16 is called oxygen family. Dry air contains 21% O_2 gas by volume. Combined sulphur exists as

sulphates such as gypsum, epsom salt, baryte etc. The allotropic forms of sulphur are Rhombic and monoclinic sulphur. S_2 is paramagnetic like O_2 and it stable at high temperature. Group 17 is Halogen family. F_2 is highly reactive, Cl_2 is greenish yellow gas. Both SO_2 and Cl_2 are used for bleaching. Group 18 is Noble gas family but some noble gases also form compounds. Complete hydrolysis of XeF_6 gives HF and XeO_3 as main products.

Q46. Match List-I with List-II:

List-I		List-II	
(A)	Ammonia	(I)	Rotten fish smell
(B)	Nitric Acid	(II)	Detection of metal ions
(C)	Phosphene	(III)	Chemiluminescence
(D)	White Phosphorus	(IV)	Ostwald Process

Choose the **correct** answer from the options given below:

- (a) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)
 (b) (A)-(IV), (B)-(II), (C)-(I), (D)-(III)
 (c) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)
 (d) (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

Q47. Sulphate of magnesium of the following is:

- (a) Gypsum
 (b) Epsom salt
 (c) Baryte
 (d) Galena

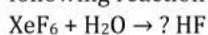
Q48. At elevated temperature (~ 1000 K) the dominant form of sulphur is:

- (a) Rhombic Sulphur
 (b) Monoclinic Sulphur
 (c) S_8 molecules
 (d) S_2

Q49. The permanent bleaching effect is caused by:

- (a) Chlorine gas
 (b) SO_2 gas
 (c) Aqua Regia
 (d) $COCl_2$

Q50. The product of complete hydrolysis of XeF_6 in the following reaction is



- (a) $XeOF_4$
 (b) XeO_2F_2
 (c) $xXeO_3$
 (d) Xe

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