

CUET UG 2023 Chemistry Question Paper PDF (Jun 11, 2023) (Shift 3)

Q1. Match List-I with List-II:

List-I		List-II	
(A)	$E_{M^{2+}/M}^\circ$ for Zn is negative	(I)	due to almost identical radii
(B)	Cr^{2+} is a reducing agent	(II)	Ionic character decreases as oxidation number of metal increases.
(C)	V_2O_5 has a low melting point	(III)	Zn^{2+} is more stable than Zn.
(D)	Zr and Hf occur together in nature	(IV)	It attains stable half-filled t_{2g} level.

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

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

Q2. Oxidation states of which oxides of halogens are not the same?

- (A) ClO_2
 (B) Cl_2O_3
 (C) BrO_2
 (D) I_2O_4
 (E) I_2O_5

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

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

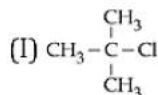
Q3. Which of the following processes is responsible for the formation of a Delta when river water meets the sea water?

- (a) Peptization
 (b) Colloid formation
 (c) Coagulation
 (d) Emulsification

Q4. Which of the following statements is **incorrect** with respect to the use of a catalyst in the reversible reaction?

- (a) The catalyst increases the rate of only the forward reaction.
 (b) The catalyst increases the rates of both the forward and the backward reaction.
 (c) The catalyst decreases the activation energy of the overall reaction.
 (d) The catalyst itself does not undergo any chemical change.

Q5. The relative reactivity order of following halides towards S_N1 reaction is:



- (II) CH_3-CH_2-Cl
 (III) CH_3Cl
 (IV) Ph_2CHCl

- (a) (IV) > (I) > (II) > (III)
 (b) (II) > (III) > (IV) > (I)
 (c) (I) > (IV) > (II) > (III)
 (d) (III) > (II) > (I) > (IV)

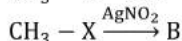
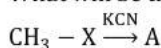
Q6. The substance having the same value of van't Hoff factor as that of $K_4[Fe(CN)_6]$ is:

- (a) $AlCl_3$
 (b) AlN
 (c) AlF_3
 (d) $Al_2(SO_4)_3$

Q7. Which one of the following will show Tyndall effect?

- (a) Aqueous solution of $NaCl$
 (b) Aqueous solution of glucose
 (c) Aqueous solution of soap below critical micelle concentration
 (d) Aqueous solution of soap above critical micelle concentration

Q8. What will be the product for the following reactions?



- (a) A : CH_3CN , B : CH_3NO_2
 (b) A : CH_3NC , B : $CH_3-O-N=O$
 (c) A : CH_3CN , B : $CH_3-O-N=O$
 (d) A : CH_3NC , B : CH_3-NO_2

Q9. Arrange the following in the decreasing order of basic strength in aqueous solution:

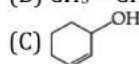
- (A) CH_3NH_2
 (B) $(CH_3)_3N$
 (C) $(CH_3)_2NH$
 (D) NH_3
 (E) $C_6H_5NH_2$

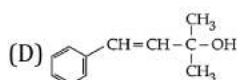
Choose the **correct** answer from the options given below:

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

Q10. Identify allylic alcohol:

- (A) $CH_2 = CH - CH_2 - OH$
 (B) $CH_3 = CH_2 - CH_2 - OH$





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

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

Q11. Match List-I with List-II:

List-I (Vitamin)		List-II (Deficiency)	
(A)	Vitamin D	(I)	Slow blood clotting
(B)	Vitamin C	(II)	Night blindness
(C)	Vitamin K	(III)	Rickets
(D)	Vitamin A	(IV)	Scurvy

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

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

Q12. Which of the following is a molecular solid?

- (a) ZnS
(b) Diamond
(c) SiC
(d) I₂

Q13. _____ solution of phenol in water acts as a disinfectant.

- (a) 1%
(b) 0.2%
(c) 0.3%
(d) 0.4%

Q14. In Octahedral coordination entities:

- (a) t_{2g} set has lower energy than e_g set.
(b) t_{2g} set has lower energy than e_g set.
(c) e_g set has lower energy than t_{2g} set.
(d) e_g set has lower energy than t_{2g} set,

Q15. For the brown ring test, the correct order of the steps in the experiment is:

- (A) Pour conc. H₂SO₄ very slowly along the side of the test tube, very few drops of the acid should be poured.
(B) Take half spatula of the given salt in a dry test tube.
(C) Add 2 - 3 mL of freshly prepared ferrous sulphate solution to the test tube.
(D) Make a solution of the given salt.

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

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

Q16. Which one of the following is not an application of adsorption?

- (a) Separation of inert gases

- (b) In curing diseases
(c) Homogeneous catalysis
(d) Chromatographic analysis

Q17. When chlorine gas is passed through a hot solution of NaOH, a disproportionation reaction occurs. The zero-oxidation state of chlorine changes to:

- (A) 0 to +5
(B) 0 to -1
(C) 0 to +3
(D) 0 to +1

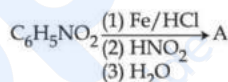
Choose the **correct** answer from the options given below:

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

Q18. Number of ions produced on electrolysis of [Co(NH₃)₆].Cl₃ which gives 3 mol of AgCl on reacting with AgNO₃, are:

- (a) 1
(b) 2
(c) 3
(d) 4

Q19.



Product 'A' is:

- (a) C₆H₅NO₂
(b) C₆H₅OH
(c) *m* - NO₂C₆H₅ - NH₂
(d) C₆H₅NH₂

Q20. The manufacture of sulphuric acid involves the following steps. Identify X₁, X₂, X₃ and X₄ in the reactions involved:

- (i) X₁ + O₂(g) → SO₂(g)
(ii) 2SO₂(g) + O₂ $\xrightarrow{X_2}$ 2X₃
(iii) X₃ + H₂SO₄ → X₄

X ₁	X ₂	X ₃	X ₄
(a) S	V ₂ O ₅	SO ₃	H ₂ S ₂ O ₇
(b) SO ₃	V ₂ O ₃	S	H ₂ SO ₅
(c) H ₂ S	VO ₂	SO ₃	H ₂ SO ₅
(d) S	V ₂ O ₃	SO ₃	H ₂ S ₂ O ₇

Q21. Match List - 1 with List - 11.

List-I Reaction of		List-II Products	
(A)	+ H ₃ PO ₂	(I)	
(B)	$\xrightarrow{\text{KI}}$	(II)	
(C)	$\xrightarrow{\text{H}_2\text{O}}$	(III)	
(D)	$\xrightarrow{\text{C}_6\text{H}_5\text{NH}_2}$	(IV)	

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

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

Q22. Glucose does not give reaction with which of the following?

- (a) $\text{NH}_2 - \text{OH}$
 (b) HCN
 (c) $(\text{CH}_3\text{CO})_2\text{O}$
 (d) NaHSO_3

Q23. Amylose and amylopectin are the two components of starch. Which of the following statement is true?

- (a) Amylose is water soluble and amylopectin is water insoluble.
 (b) Both components are water insoluble.
 (c) Both components are water soluble.
 (d) Amylopectin is water soluble and amylose is water insoluble.

Q24. Which of the pair(s) are correctly matched?

	Colloid type	:	Example
(A)	Liquid in solids	:	Gem stones
(B)	Solid in liquid	:	Cell fluids
(C)	Solid in Gas	:	Mist
(D)	Gas in liquid	:	Pumice stone
(E)	Liquid in Solid	:	Butter

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

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

Q25. In Kolbe's reaction, phenol undergoes:

- (a) Electrophilic addition
 (b) Electrophilic substitution
 (c) Nucleophilic addition
 (d) Nucleophilic substitution

Q26. For the following oxo acids, choose the increasing order of their acidity:

- (A) $\text{HClO} < \text{HClO}_2 < \text{HClO}_4 < \text{HClO}_3$
 (B) $\text{HClO}_4 < \text{HClO}_2 < \text{HClO}_3 < \text{HClO}$
 (C) $\text{HClO}_3 < \text{HClO}_4 < \text{HClO}_2 < \text{HClO}$
 (D) $\text{HClO} < \text{HClO}_2 < \text{HClO}_3 < \text{HClO}_4$

Choose the correct answer from the options given below:

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

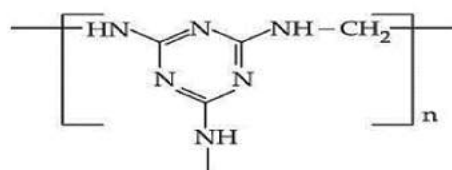
Q27. The IUPAC name of the complex

$[\text{Pt}(\text{NH}_3)_2\text{Cl}(\text{NH}_2\text{CH}_3)]\text{Cl}$ is:

- (a) Diaminechloromethylamineplatinum (II) chloride
 (b) Diaminechloridomethylamineplatinum (III) chloride
 (c) Diamminechloridomethylamineplatinum (II) chloride

- (d) Diamminechloridomethaneamineplatinum (II) chloride

Q28.



(A)

(A) is used in the manufacture of unbreakable crockery. Polymer (A) is:

- (a) Melamine
 (b) Bakelite
 (c) Novolac
 (d) Buna-S

Q29. The desalination of sea water plant stops working due to which of the following reasons?

- (a) The pressure applied on the saline water was less than osmotic pressure.
 (b) The pressure applied on the saline water was greater than osmotic pressure.
 (c) The osmotic pressure application has no significance.
 (d) Salinity of water decreased and osmotic pressure was more than pressure applied.

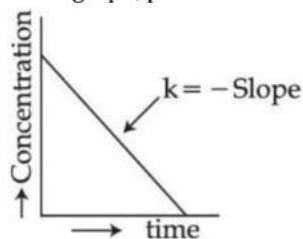
Q30. Neutral or weakly alkaline KMnO_4 solution will oxidise iodide ion into:

- (a) iodate ion.
 (b) periodate ion.
 (c) iodite ion.
 (d) hypoiodite ion.

Q31. Which of the following statements is incorrect with respect to the plot of molar conductivity (Λ_m) versus square root of concentration ($c^{\frac{1}{2}}$) for electrolytes in solution?

- (a) For strong electrolytes, a straight line with extrapolatable intercept of limiting molar conductivity (Λ_m°) is obtained.
 (b) For strong electrolytes, a straight line with negative slope is obtained.
 (c) For strong electrolytes, a straight line with positive slope is obtained.
 (d) For weak electrolytes, a straight line is not obtained.

Q32. From graph, predict the order of the reaction:



- (a) First order reaction
 (b) Second order reaction

- (c) Zero order reaction
(d) Order can not be predicted from given graph.
- Q33.** In inorganic salt analysis, for the indicative test of Cl^- , conc. H_2SO_4 is used. This is because:
(a) Conc. H_2SO_4 is a strong oxidising agent and Cl_2 is produced.
(b) Conc. H_2SO_4 is a strong reducing agent and HCl is produced.
(c) Conc. H_2SO_4 is a strong dehydrating agent and Cl_2 is produced.
(d) Conc. H_2SO_4 has lower volatility than HCl .
- Q34.** $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow[413\text{K}]{\text{H}_2\text{SO}_4}$ A. Identify "A" and mention the name of mechanism through which it is formed?
(a) $\text{CH}_2=\text{CH}_2$, Elimination
(b) $\text{C}_2\text{H}_5-\text{O}-\text{C}_2\text{H}_5$, $\text{S}_{\text{N}}2$
(c) $\text{C}_2\text{H}_5-\text{O}-\text{C}_2\text{H}_5$, $\text{S}_{\text{N}}1$
(d) CH_3COOH , Oxidation
- Q35.** Which of the following pairs of transition metal ions is the strongest oxidizing agent?
(a) Fe^{2+} and Mn^{2+}
(b) Cu^{2+} and Ti^{2+}
(c) Ni^{2+} and Cr^{3+}
(d) Mn^{3+} and Fe^{3+}
- Q36.** When silver or gold is leached as follows, $4\text{M} + 8\text{CN}^- + 2\text{H}_2\text{O} + \text{O}_2 \rightarrow \text{_____}$, the product is:
(M = Ag or Au)
(a) $[\text{M}(\text{CN})_2]^-$
(b) M_2O
(c) $[\text{M}(\text{CN})_4]^{3-}$
(d) M_2O_3
- Q37.** Gabriel phthalimide synthesis is used for the preparation of:
(a) Primary aliphatic amines
(b) Secondary aliphatic amines
(c) Primary aromatic amines
(d) Secondary aromatic amines
- Q38.** Transition metal ions having zero unpaired electrons are:
(A) Sc^{3+}
(B) Ti^{3+}
(C) Cu^{2+}
(D) Zn^{2+}
(E) Mn^{2+}
Choose the **correct** answer from the options given below:
(a) (A) and (B) only
(b) (C) and (D) only
(c) (A) and (D) only
(d) (D) and (E) only
- Q39.** False statement about Frenkel defect is:
(a) It is a combination of vacancy defect and interstitial defect.
(b) Density remains unchanged.
(c) Non-ionic solids show this defect.
(d) Shown by solids with large difference in size of cations and anions.

- Q40.** From the following, choose the one which are not secondary haloalkanes:
(A) 2-Bromopentane
(B) 1-Bromo-3-methylbutane
(C) 3-Bromopentane
(D) 2-Bromo-2-methylbutane
(E) 2-Bromo-3-methylbutane

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

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

Direction for the question 41 to 45: **Read the following passage given below and answer the question.**

Production of electricity by thermal plants is not very efficient method. It is now possible to make cells in which reactants are fed continuously to the electrodes and products are also removed continuously. One of the most successful fuel cells is hydrogen fuel cell.

- Q41.** Which is not true for the fuel cell?
(a) Efficient
(b) Not cost effective
(c) Pollution free
(d) Can be used by astronauts
- Q42.** Hydrogen fuel cell is an:
(a) electrochemical cell.
(b) electrolytic cell.
(c) can be both electrochemical and electrolytic cell.
(d) neither electrochemical nor electrolytic cell.
- Q43.** In Hydrogen fuel cell, which gas is undergoing oxidation?
(a) Only hydrogen
(b) Only oxygen
(c) Both hydrogen and oxygen
(d) Neither hydrogen nor oxygen
- Q44.** Which of the following statement is **correct** regarding hydrogen fuel cells?
(a) This cell uses the reaction between hydrogen and nitrogen to form ammonia.
(b) Catalysts such as finely divided platinum on palladium metal do not have any effect on the rate of electrode reactions.
(c) The electricity production in fuel cells is higher than that in thermal plants.
(d) The cell can run even when reactant supply stops.
- Q45.** In hydrogen fuel cell, the reactants are bubbled through which electrodes?
(a) Saturated Calomel electrode
(b) Silver electrodes
(c) Platinum electrodes
(d) Porous carbon electrodes

Direction for the question 46 to 50: **Read the following passage given below and answer the question.**

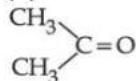
Aldehydes and ketones undergo nucleophilic addition reactions. A nucleophile attacks the electrophilic carbon atom of polar carbonyl group from perpendicular to plane

of sp^2 hybridised orbitals of carbonyl carbon. The hybridisation of carbon changes from sp^2 to sp^3 and a tetrahedral alkoxide intermediate is formed. This captures H^+ to give neutral product. In carboxylic acids, carbonyl carbon is less electrophilic than carbonyl carbon in aldehydes and ketones.

Q46. The correct order of reactivity for addition reaction of following carbonyl compounds with C_2H_5MgI

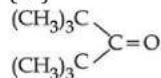
(I) $HCHO$

(II)



(III) CH_3CHO

(IV)



(A) (I) > (III) > (II) > (IV)

(B) (IV) > (III) > (II) > (I)

(C) (I) > (II) > (IV) > (III)

(D) (III) > (II) > (I) > (IV)

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

(a) (C)

(b) (D)

(c) (A)

(d) (B)

Q47. How will you convert acetaldehyde to lactic acid?

(a) treating with HCN followed by hydrolysis

(b) treating with CH_3OH molecules twice

(c) treating with sodium bisulphite and then hydrolysing

(d) treating with CH_3MgBr followed by hydrolysis

Q48. The optimum pH for carrying out the reaction of aldehyde with hydroxylamine to form oxime is:

(a) $pH = 1$

(b) $pH = 4-5$

(c) $pH = 12$

(d) Any pH

Q49. An organic compound C_3H_6O does not give a precipitate with 2,4-dinitrophenylhydrazine and also does not react with metallic sodium. It could be

(a) CH_3CH_2CHO

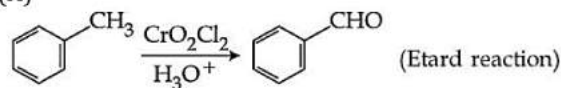
(b) $CH_2=CH-CH_2OH$

(c) CH_3COCH_3

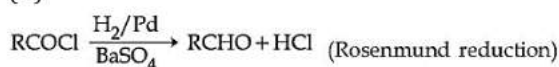
(d) $CH_2=CH-O-CH_3$

Q50. Choose the correct answer from the options given below:

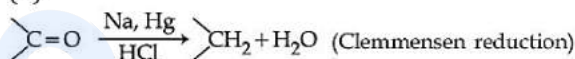
(A)



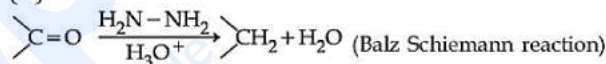
(B)



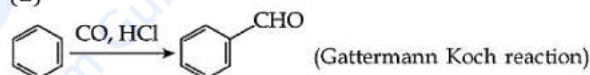
(C)



(D)



(E)



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

(a) (A), (B), (C), (D) only

(b) (B), (C), (D), (E) only

(c) (E), (A), (D) only

(d) (A), (B), (C), (E) only