

CUET UG 2023 Chemistry Question Paper PDF (Jun 08, 2023) (Shift 3)

- Q1.** Mischmetall consists of a lanthanoid metal (95%) and Iron (~5%) and traces of S, Ca & Al. Mischmetall used for producing bullets contains:
- (a) S based alloy
 - (b) Mg based alloy
 - (c) Ca based alloy
 - (d) Al based alloy

- Q2.** Which solutions will have the highest boiling point?
- (a) 1M BaCl₂ solution
 - (b) 1M NaCl solution
 - (c) 1M C₆H₁₂O₆ solution
 - (d) 1M (NH₂)₂CO solution

- Q3.** Molecules in solids are held together by dipole - dipole interactions. Identify the polar molecules from the following.
- A. Solid SO₂
 - B. NH₃
 - C. Cl₂
 - D. HCl
 - E. He

Choose the correct answer from the options given below:

- (a) A, B and D only
 - (b) A, C and E only
 - (c) B, C and D only
 - (d) A, B and C only
- Q4.** The main cause of basicity of oxoacids of phosphorous is:
- (a) P-H bonds
 - (b) P-OH bonds
 - (c) H₃ - PO₃ bonds
 - (d) Hydrogen bonds

- Q5.** Match List I with List II

	List - I		List - II
(A)	Solvent used in perfumes	(I)	Phenol
(B)	Starting material for picric acid	(II)	Glycerol
(C)	Wood Spirit	(III)	Methanol
(D)	By product of soap industry used in cosmetics	(IV)	Ethanol

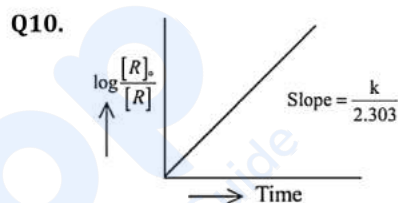
Choose the correct answer from the options given below:

- (a) A-I, B-II, C-III, D-IV
 - (b) A-IV, B-III, C-II, D-I
 - (c) A-IV, B-I, C-III, D-II
 - (d) A-II, B-III, C-IV, D-I
- Q6.** $2\text{KClO}_3 \xrightarrow{653-873\text{K}} 2\text{KCl} + 3\text{O}_2$
On adding manganese dioxide to the above reaction, the subsequent decomposition takes place at
- (a) Lower temperature
 - (b) Higher temperature
 - (c) The same temperature
 - (d) Unaltered by temperature change

- Q7.** Which of the following colligative property is associated with concentration in terms of molarity?
- (a) Lowering of vapour pressure
 - (b) Depression in freezing point
 - (c) Osmotic pressure
 - (d) Elevation in boiling point

- Q8.** ZSM-5 is a catalyst used for
- (a) Converting zinc into aluminium
 - (b) Converting alcohols into gasoline
 - (c) Converting zeolites into Zinc
 - (d) Converting Zinc into Zeolites

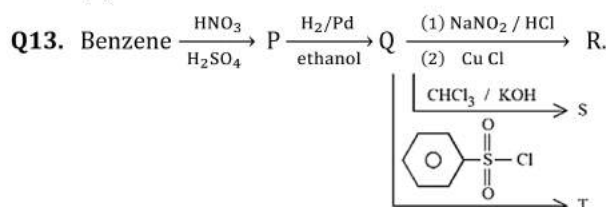
- Q9.** The IUPAC Name for the complex Hg [Co (SCN)₄]
- (a) Mercury tetrathiocyanatocobaltate (III)
 - (b) Mercury tetrathiocyanatocobaltate (IV)
 - (c) Tetracyanocobalt Mercuric (III)
 - (d) Tetrathiocyanato cobalt Mercuric (IV)



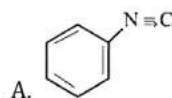
Above graph is not applicable for which of the following reaction

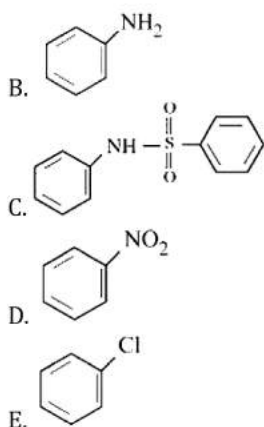
- (a) $2\text{NH}_3(\text{g}) \xrightarrow[\text{Pt catalyst}]{1130\text{K}} \text{N}_2(\text{g}) + 3\text{H}_2(\text{g})$
 - (b) $\text{C}_2\text{H}_4(\text{g}) + \text{H}_2(\text{g}) \longrightarrow \text{C}_2\text{H}_6(\text{g})$
 - (c) ${}^{226}_{88}\text{Ra} \longrightarrow {}^4_2\text{He} + {}^{222}_{86}\text{Rn}$
 - (d) $\text{N}_2\text{O}_5(\text{g}) \longrightarrow 2\text{NO}_2(\text{g}) + \frac{1}{2}\text{O}_2(\text{g})$
- Q11.** Extraction of gold and silver involves leaching the metal with CN⁻ ion. This is also _____ for gold for silver
- (a) Oxidation reaction
 - (b) Reduction reaction
 - (c) Redox reaction
 - (d) Disproportionation reaction

- Q12.** Gallium and Indium can be prepared by
- (a) Zone refining
 - (b) Vapour phase refining
 - (c) Mond process
 - (d) Van Arkel Method



Predict the correct sequence of P, Q, R, S and T.





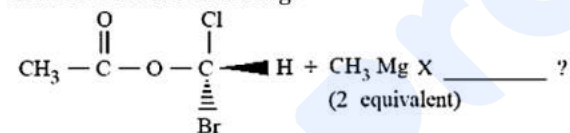
Choose the correct answer from the options given below:

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

Q14. A compound is formed by two elements P and Q. Atoms of the element Q (anions) make hcp lattice and those of element P (cations) occupies $\frac{1}{8}$ th of the tetrahedral voids. What is the formula of the compound?

- (a) PQ_4
 (b) PQ
 (c) PQ_2
 (d) P_3Q_3

Q15. Identify the Stereochemically correct product(s) formed from the following:



- (a) $(\text{CH}_3)_3\text{COH} + \begin{array}{c} \text{Cl} \\ | \\ \text{H} - \text{C} - \text{H} \\ | \\ \text{Br} \end{array}$
- (b) $(\text{CH}_3)_3\text{COH} + \begin{array}{c} \text{Cl} \\ | \\ \text{HO} - \text{C} - \text{H} \\ | \\ \text{Br} \end{array}$
- (c) $\text{CH}_3 - \text{C} = \text{CH}_2 + \begin{array}{c} \text{Cl} \\ | \\ \text{HO} - \text{C} - \text{H} \\ | \\ \text{Br} \end{array}$
- (d) $\text{CH}_3 - \text{C} = \text{CH}_2 + \begin{array}{c} \text{Cl} \\ | \\ \text{HO} - \text{C} - \text{H} \\ | \\ \text{Br} \end{array}$

Q16. The correct shape & hybridisation for XeF_2 are:

- (a) linear, sp^3d
 (b) linear, sp^3d^2
 (c) trigonal bipyramidal sp^3d
 (d) trigonal bipyramidal sp^3d^2

Q17. Feron-12 is manufactured from tetrachloromethane by

- (a) Wurtz reaction
 (b) Finkelstein reaction
 (c) Swarts reaction
 (d) β - elimination reaction

Q18. What will happen during the electrolysis of aqueous solution of CuSO_4 by using platinum electrodes?

- A. Copper will deposit at cathode.
 B. Copper will deposit at anode
 C. Oxygen will be released at anode
 D. Copper will dissolve at anode
 Choose the correct answer from the options given below:

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

Q19. If KMnO_4 is reduced by oxalic acid in the acidic medium, then the oxidation number of Mn changes from:

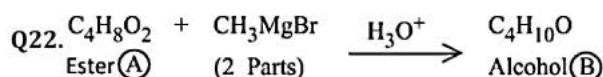
- (a) +4 to +2
 (b) +6 to +4
 (c) +7 to +2
 (d) +7 to +4

Q20. In a coordination entity the central atoms or ions are referred to as:

- (a) Neutral entity
 (b) Lewis base
 (c) Lewis acid
 (d) Amphoteric entity

Q21. Experimentally determined molar mass is always lower than the true value in case of:

- (a) Strong electrolytes
 (b) Weak electrolytes
 (c) Non-electrolytes
 (d) Dimers



The alcohol (B) react the fastest with Lucas reagent. The ester (A) & alcohol (B) are respectively:

- (a) $\text{CH}_3\text{COC}_2\text{H}_5$; $(\text{CH}_3)_3\text{COH}$
 (b) HCOC_3H_7 ; $(\text{CH}_3)_2\text{CHOH}$
 (c) $\text{CH}_3\text{COC}_2\text{H}_5$; $(\text{CH}_3)_2\text{CHOH}$
 (d) HCOC_3H_7 ; $(\text{CH}_3)_3\text{COH}$

Q23. Match List I with List II

LIST I		LIST II	
A.		I.	quinol
B.		II.	o-cresol
C.		III.	catechol
D.		IV.	resorcinol

Choose the correct answer from the options given below:

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

Q24. Match List I with List II

List - I		List - II	
A.	Linear plot with +ve slope & an intercept	I.	$t_{\frac{1}{2}}$ vs $\frac{1}{[A]_0}$ for 2 nd order
B.	Linear plot with -ve slope & an intercept	II.	$t_{\frac{1}{2}}$ vs $[A]_0$ for 1 st order
C.	Linear horizontal plot	III.	$\frac{1}{[A]}$ vs time for 2 nd order
D.	Linear plot passing through the origin	IV.	Conc. [A] vs time for zero order

Choose the correct answer from the options given below:

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

Q25. Electrical disintegration or Bredig's Arc method involves

- (a) Fermentation
 (b) Condensation
 (c) Evaporation
 (d) Filtration

Q26. Which of the statements below are correct?

- A. Actinoid contraction is greater than lanthanoid contraction.
 B. The magnetic property of the actinoids are more complex than those of the lanthanoids.
 C. Actinoid contraction taking place due to poor shielding by 5f electrons.
 D. Actinoid contraction taking place due to poor shielding by 6f electrons.

Choose the correct answer from the options given below:

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

Q27. $\text{Zn (s)} \longrightarrow \text{Zn}^{2+} + 2\text{e}^-$

Above reaction at anode is found in:

- (a) Leclanche cell
 (b) Mercury cell
 (c) Ni-Cd Cell
 (d) Fuel cell

Q28. An aqueous solution of urea has a freezing point of -0.52°C . Predict the osmotic pressure of the solution at 37°C [$K_f = 1.86$, assuming that the molar concentration and molality are numerically equal]

- (a) 1 atm
 (b) 7.1 atm
 (c) 11 atm
 (d) 8.5 atm

Q29. White phosphorous shows chemiluminescence because it:

- (a) is poisonous
 (b) is waxy
 (c) glows in the dark
 (d) reacts in inert atmosphere

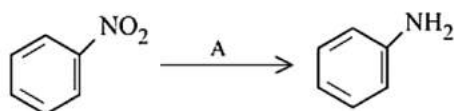
Q30. Arrange the following compounds in the increasing order of the rate of reaction towards nucleophilic substitution.

- A.
- B.
- C.
- D.
- E.

Choose the correct answer from the options given below:

- (a) $\text{E} < \text{D} < \text{C} < \text{B} < \text{A}$
 (b) $\text{E} < \text{C} < \text{D} < \text{A} < \text{B}$
 (c) $\text{B} < \text{C} < \text{D} < \text{A} < \text{E}$
 (d) $\text{C} < \text{B} < \text{A} < \text{D} < \text{E}$

Q31. What will be 'A' in the following reaction.



- (a) $\text{C}_2\text{H}_5\text{O}^\ominus\text{Na}^\oplus/\text{C}_2\text{H}_5\text{OH}$
 (b) $\text{H}^+/\text{H}_2\text{O}$
 (c) $\text{Sn}/\text{Dil HCl}$
 (d) OH^-/KOH

Q32. Out of the following half cells, which two half cell combination gives the largest E_{cell} value?

- $\text{A}^{3+} \rightarrow \text{A}^{2+} + \text{e}^- \quad E^\circ = +1.5\text{V} \quad \dots \dots \dots \text{(I)}$
 $\text{B}^+ + \text{e}^- \rightarrow \text{B} \quad E^\circ = -0.5\text{V} \quad \dots \dots \dots \text{(II)}$
 $\text{C}^{2+} + \text{e}^- \rightarrow \text{C}^+ \quad E^\circ = +0.5\text{V} \quad \dots \dots \dots \text{(III)}$
 $\text{D} \rightarrow \text{D}^{2+} + 2\text{e}^- \quad E^\circ = -1.5\text{V} \quad \dots \dots \dots \text{(IV)}$

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

Q33. Match List I and with List II

	List - I (Complex ions)		List - II (Wavelength λ)
A.	$[\text{CoCl}(\text{NH}_3)_5]^{2+}$	I.	500 nm
B.	$[\text{Co}(\text{NH}_3)_5(\text{H}_2\text{O})]^{3+}$	II.	535 nm
C.	$[\text{Co}(\text{NH}_3)_6]^{3+}$	III.	475 nm
D.	$[\text{Co}(\text{CN})_6]^{3-}$	IV.	310 nm

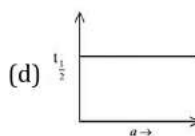
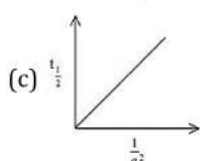
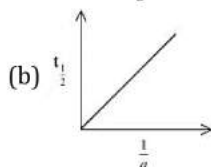
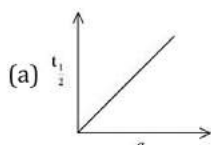
Choose the correct answer from the options given below:

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

Q34. According to Alexander Zaitsev the most preferred product for dehydrohalogenation of 2-Bromopentane will be:

- (a) Pent-1-ene
 (b) Pent-2-ene
 (c) Pent-3-ene
 (d) Bromopentane

Q35. Which of the following curves represent a first order reactions?



Q36. Which of the following is not correct?

- A. $\text{La}(\text{OH})_3$ is less basic than $\text{Lu}(\text{OH})_3$
 B. In Lanthanoid series, ionic radius of M^{3+} ion decreases from La to Lu.
 C. La is an element of transition series rather than a Lanthanoid series.
 D. Atomic radii of Zr and Hf are the same because of Lanthanoid contraction.

Choose the correct answer from the options given below:

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

Q37. You have the following substances: NH_3 , O_2 , Pt & H_2O . Arrange the following equations for the preparation of N_2O from these compounds.

- A. $\text{NH}_4\text{NO}_3(\text{aq}) \xrightleftharpoons[\text{at room temp}]{\text{vacuum evaporation}} \text{NH}_4\text{NO}_3 \xrightarrow{523\text{K}} \text{N}_2\text{O}(\text{g}) + 2\text{H}_2\text{O}(\text{s})$
 B. $\text{NH}_3(\text{g}) + \text{HNO}_3(\text{aq}) \longrightarrow \text{NH}_4\text{NO}_3(\text{aq})$
 C. $3\text{NO}_2(\text{g}) + \text{H}_2\text{O}(\text{l}) \longrightarrow 2\text{HNO}_3(\text{aq}) + \text{NO}(\text{g})$
 D. $2\text{NO}(\text{g}) + \text{O}_2(\text{g}) \longrightarrow 2\text{NO}_2(\text{g})$
 E. $4\text{NH}_3(\text{g}) + 5\text{O}_2(\text{g}) \xrightarrow[1100\text{K}]{\text{Pt}} 4\text{NO}(\text{g}) + 6\text{H}_2\text{O}(\text{l})$

Choose the correct answer from the options given below:

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

Q38. When a ferromagnetic substance is placed in a magnetic field, it becomes a permanent magnet because:

- (a) all the domains get oriented in the direction of the magnetic field
 (b) all the domains get oriented in the direction opposite to the direction of the magnetic field
 (c) domains get oriented randomly
 (d) domains are not affected by the magnetic field

Q39. A brown ring is formed in the ring test for NO_3^- ion. It is due to the formation of

- (a) $[\text{Fe}(\text{H}_2\text{O})_5(\text{NO})]^{2+}$
 (b) $[\text{Fe}(\text{H}_2\text{O})_4(\text{NO})_2]^{2+}$
 (c) $[\text{Fe}(\text{H}_2\text{O})_4(\text{NO})]^{2+}$
 (d) $[\text{Fe}(\text{H}_2\text{O})_5(\text{NO})_2]^{2+}$

Q40. Arrange the following in increasing order of their basic strength

- (I) $\text{C}_6\text{H}_5\text{NH}_2$ (II) $\text{C}_2\text{H}_5\text{NH}_2$ (III) NH_3
 (a) $\text{II} < \text{I} < \text{III}$
 (b) $\text{I} < \text{III} < \text{II}$
 (c) $\text{III} < \text{I} < \text{II}$
 (d) $\text{III} < \text{II} < \text{I}$

Direction (Q41 to Q45) Answer the question on the basis of passage given below:

Formaldehyde is the first member of the aldehydic series. It is present in green leaves of plants where its presence is supposed to be due to the reaction of CO_2 with water in the presence of sunlight and chlorophyll. Commercially, formaldehyde is obtained by the controlled oxidation of methane in the presence of molybdenum oxide (MoO) acting as a catalyst. Formaldehyde is a constituent of a number of polymers also called resins. These are non volatile solids or semi solids which are obtained directly from certain plants and can be synthesized in the laboratory.

Q41. What is formalin?

- (a) Formalin is 20% aqueous solution of formaldehyde
- (b) Formalin is 10% aqueous solution of formaldehyde
- (c) Formalin is 40% aqueous solution of formaldehyde
- (d) Formalin is 35% aqueous solution of formaldehyde

Q42. How is formalin useful?

- (a) Formalin is used as antibiotics
- (b) Formalin is used as germicide, disinfectant and antiseptic
- (c) Formalin is used as insecticide
- (d) Formalin is used as antacids

Q43. Match List I with List II

List - I		List - II	
A.	Bakelite formaldehyde resin	I.	Condensation polymers
B.	Melamine formaldehyde resin	II.	Phenol and formaldehyde
C.	Urea formaldehyde resin	III.	Melamine and formaldehyde
D.	Bakelite & Melamine formaldehyde resin	IV.	Unbreakable cups and laminated sheets

Choose the correct answer from the options given below:

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

Q44. Formaldehyde on reaction with benzaldehyde in basic medium gets converted to:

- (a) Methanol
- (b) Formic acid
- (c) o/p-hydroxymethyl benzaldehyde
- (d) o/p-hydroxymethyl benzoic acid

Q45. Benzaldehyde is less reactive towards nucleophilic addition reaction than formaldehyde because of:

- (a) + R effect of $> \text{C} = \text{O}$ group and steric factor due to phenyl group
- (b) - I effect of $> \text{C} = \text{O}$ group and steric factor due to phenyl group
- (c) + I effect of $> \text{C} = \text{O}$ group and steric factor due to phenyl group
- (d) + I effect of $> \text{C} = \text{O}$ group and steric factor due to phenyl group

Direction (Q46 to Q50) Answer the question on the basis of passage given below:

Living systems are made up of various complex biomolecules like carbohydrates, proteins, nucleic acids, lipids etc. Proteins and carbohydrates are essential constituents of our food. Carbohydrates are primarily produced by plants and form a very large group of naturally occurring organic compounds. Some common examples are cane sugar, glucose, starch etc.

Q46. Carbohydrates are also known as Saccharides because

- (a) sugarcane is a source
- (b) it is sweet in taste
- (c) it means sugar in Greek
- (d) of monosaccharide units

Q47. Which animal starch is found in yeast and fungi?

- (a) Amylopectin
- (b) Glycogen
- (c) Lactose
- (d) Sucrose

Q48. Insulin, generally given to diabetic patients is a:

- (a) Carbohydrate
- (b) Protein
- (c) Vitamin
- (d) Nucleic acid

Q49. Match List I with List II

List - I		List - II	
A.	Carbohydrates	I.	Amide linkage
B.	Proteins	II.	Ester linkage
C.	Nucleic acids	III.	Ether linkage
D.	Lipids	IV.	Phosphodiester linkage

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

Q50. Carbohydrates are stored in animals as:

- (a) Glucose
- (b) Starch
- (c) Glycogen
- (d) Cellulose