

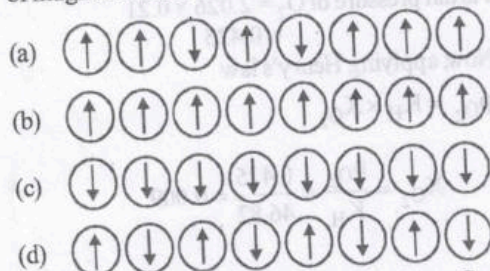
CUET Chemistry Solved Paper-2022

Held on 17 August 2022

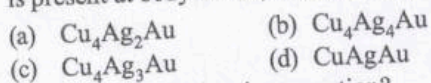
1. In a face centred cubic unit cell of close packed atoms, the radius of atom (r) is related to the edge length ' a ' of the unit cell by the expression

(a) $r = \frac{a}{\sqrt{2}}$ (b) $r = \frac{a}{2}$
 (c) $r = \frac{a}{2\sqrt{2}}$ (d) $r = \frac{\sqrt{3}a}{4}$

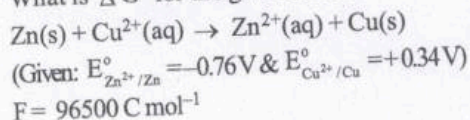
2. Which of the following arrangements represents alignment of magnetic moments of Ferrimagnetic substance?



3. An alloy of Cu, Ag and Au is found to have Cu constituting the CCP lattice. If Ag atoms occupy edge centres, and Au is present at body centre, then the alloy has formula

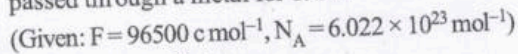


4. What is ΔG° for the given reaction?



- (a) $\Delta G^\circ = -212.3 \text{ kJ/mol}$
 (b) $\Delta G^\circ = +212.3 \text{ kJ/mol}$
 (c) $\Delta G^\circ = -312.5 \text{ kJ/mol}$
 (d) $\Delta G^\circ = 0$

5. How many electrons flow when a current of 5 amperes is passed through a metal for 193s?



- (a) 6.022×10^{23} electrons
 (b) 6.022×10^{21} electrons
 (c) 3.011×10^{21} electrons
 (d) 3.011×10^{23} electrons

6. Kohlrausch law of independent migration of ion is applicable to

- (a) Only to weak electrolytes at a certain concentration
 (b) Only to strong electrolytes at all concentrations
 (c) To both - strong and weak electrolytes
 (d) To non-electrolytes

7. In the first order reaction the concentration of the reactant is reduced $\frac{1}{4}$ th in 60 minutes, what will be its half-life?

- (a) 120 minutes (b) 40 minutes
 (c) 30 minutes (d) 25 minutes

8. Which of the following is the correct relationship between time required for completion of 99.9% of a first order reaction and its half-life?

(a) $t_{99.9\%} = 5 \times t_{99.9\%}$ (b) $t_{99.9\%} = 10 \times t_{\frac{1}{2}}$
 (c) $t_{99.9\%} = 2t_{\frac{1}{2}}$ (d) $t_{99.9\%} = t_{\frac{1}{2}}$

9. A catalyst increases the rate of reaction by:

- (a) Decreasing enthalpy of reactants
 (b) Increasing internal energy of reactants
 (c) Decreasing activation energy of reaction
 (d) Increasing activation energy of reaction

10. Match List-I with List-II.

List-I	List-II
A. Gem stone	I. Emulsion
B. Milk	II. Solid sol
C. Cloud	III. Foam
D. Froth	IV. Aerosol

Choose the correct answer from the options given below:

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

11. Consider the case when a highly diluted solution of KI is added to AgNO_3 solution. Arrange the following in the increasing order of ease of coagulation of the resulting sol.

- A. BaSO_4 B. NaCl
 C. Na_3PO_4 D. $\text{K}_4[\text{Fe}(\text{CN})_6]$

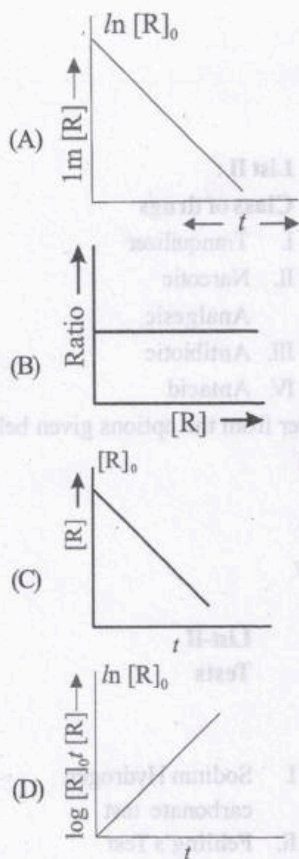
Choose the correct answer from the options given below:

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

12. Which of the following conditions can be used to change physical adsorption of a gas to chemical adsorption?

- (a) Decrease in temperature
 (b) Increase in temperature
 (c) Using catalyst
 (d) Increasing surface area of adsorbent

13. Which of the following graph(s) are for First Order Reactions?



- (a) A and D only (b) B and C only
(c) A, D and E only (d) C and E only
14. Consider the statements for the metallurgical processes and select the correct statements:
- (A) Malachite is an ore of copper
(B) Bauxite is an ore of aluminium
(C) Calamine is an ore of Zinc
(D) Haematite is an ore of iron
(E) Siderite is an ore of Zinc
- Choose the correct statement from the options given below
- (a) A, B, E and D only (b) A and B only
(c) A, B, C and D only (d) A only
15. Arrange the following molecules in the increasing order of number of P – OH bonds present in it
- (A) $H_4P_2O_6$ (B) H_3PO_2
(C) H_3PO_4 (D) H_3PO_3
- Choose the correct answer from the options given below
- (a) $B < C < D < A$ (b) $B < D < C < A$
(c) $D < B < A < C$ (d) $D < C < B < A$
16. Arrange the following in the decreasing order of acidity:
- (A) H_2O (B) H_2S
(C) H_2Te (D) H_2Se

Choose the correct answer from the options given below:

- (a) $D > C > B > A$ (b) $C > D > B > A$
(c) $A > B > C > D$ (d) $A > B > D > C$
17. Which of the following molecules have linear shape?
- (a) XeF_2 (b) XeF_4
(c) XeF_6 (d) XeO_3
18. Which of the following statements about d-block elements are NOT correct?
- (a) They show variable oxidation states
(b) They exhibit paramagnetic and diamagnetic properties
(c) All of their ions are coloured
(d) They exhibit catalytic property
19. The spin only magnetic moment of Cr^{3+} ion in BM is:
- (a) 1.73 (b) 3.87
(c) 4.89 (d) 3.57
20. Select the correct statements for the d-block and f-block elements:
- A. The maximum oxidation state shown by manganese is +6.
B. Sc^{3+} (Scandium) is colourless
C. Brass is an alloy of Copper and Zinc
D. Lanthanide series included a total of 15 elements
E. V_2O_5 (Vanadium Pentaoxide) is used in the manufacturing of sulphuric acid (by contact process).
- Choose the correct answer from the options given below:
- (a) A and B only (b) A, B and E only
(c) B, C and E only (d) B, C and D only
21. The IUPAC name of $[Pt(NH_3)_2Cl_2]$ is:
- (a) Diammine dichlorido platinum (II)
(b) Diammine dichlorido platinum (IV)
(c) Diammine dichlorido platinum (0)
(d) Diimine dichlorido platinum (IV)
22. Match List I with List II

List I: (Property)	List II: (Reason)
A. Transition metal can act as catalyst	I. Due to their high ionic charges, small size and availability of d-orbitals
B. Zr and Hf have similar atomic radii	II. Unpaired electrons in d-orbitals of metal ions
C. Transition metals form complex compounds	III. Ability to adopt multiple oxidation states and to form complexes
D. Transition metals ions are coloured	IV. As consequence of Lanthanoid contraction

Choose the correct answer from the option given below:

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

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

23. The donor atoms in ethylene diamine tetra acetate ions are:

- (a) Two N and two O atoms
 (b) Two N and four O atoms
 (c) Four N and two O atoms
 (d) Three N and Three O atoms

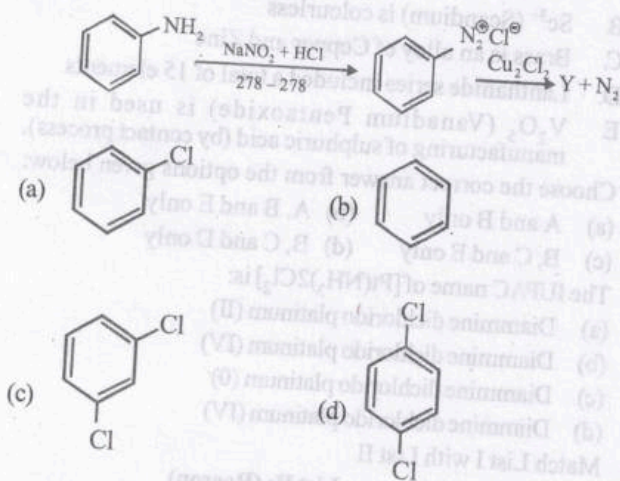
24. Indicate the complex ion which does not show geometrical isomerism:

- (a) $[\text{Cr}(\text{H}_2\text{O})_4\text{Cl}_2]^+$
 (b) $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$
 (c) $[\text{Pt}(\text{NH}_3)_6]^{3+}$
 (d) $[\text{Co}(\text{CN})_4(\text{NC})_2]^{3-}$

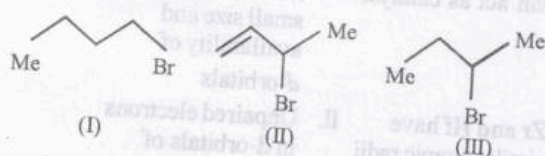
25. Which of the following is the electronic configuration of the central metal atom/ion of $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$ complex ion?

- (a) $t_2g^6eg^1$ (b) $t_2g^4eg^3$
 (c) $t_2g^5eg^2$ (d) $t_2g^6eg^0$

26. Identify the compound Y in the following reaction:



27. Consider the following bromides:

The correct order of reactivity towards $\text{S}_{\text{N}}1$ reaction is:

- (a) $\text{I} > \text{II} > \text{III}$ (b) $\text{II} > \text{III} > \text{I}$
 (c) $\text{II} > \text{I} > \text{III}$ (d) $\text{III} > \text{II} > \text{I}$

28. Aryl halides can not be prepared by the reaction of aryl alcohols with PCl_3 , PCl_5 or SOCl_2 because:

- (a) Phenols are highly stable compounds
 (b) Carbon-oxygen bond in phenols has a partial double bond character
 (c) Carbon-oxygen bond is highly polar
 (d) Phenyl cation is stabilised by resonance

29. Jones Reagent is:

- (a) $\text{KMnO}_4/\text{H}_2\text{SO}_4$
 (b) $\text{K}_2\text{Cr}_2\text{O}_7/\text{H}_2\text{SO}_4$
 (c) $\text{CrO}_3/\text{H}_2\text{SO}_4$
 (d) KMnO_4/KOH

30. Match List I with List II

List I:

Names of drug

- A. Ranitidine
 B. Valium

C. Codeine

D. Chloramphenicol

List II:

Class of drugs

I. Tranquilizer

II. Narcotic

Analgesic

III. Antibiotic

IV. Antacid

Choose the correct answer from the options given below:

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

31. Match List I with List II

List-I

Given pair of organic compounds can be distinguished by

1. Ethanal/Propanal
 2. Ethanol/Ethanoic acid
 3. Butanal/Butan-2-one
 4. Benzaldehyde/Ethanal

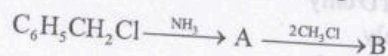
List-II
Tests

- I. Sodium Hydrogen carbonate test
 II. Fehling's Test
 III. Tollen's Test
 IV. Iodoform Test

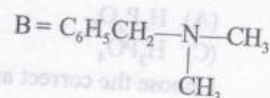
Choose the correct answer from the options given below:

- (a) 1-IV, 2-I, 3-II, 4-III
 (b) 1-III, 2-II, 3-IV, 4-I
 (c) 1-IV, 2-I, 3-III, 4-II
 (d) 1-I, 2-II, 3-III, 4-IV

32. Identify A and B in the following reaction:



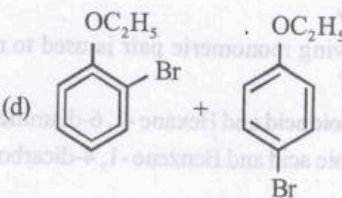
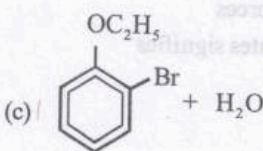
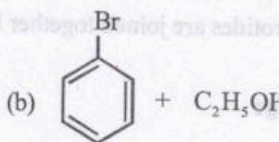
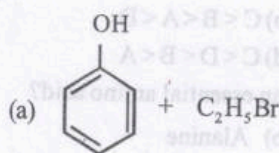
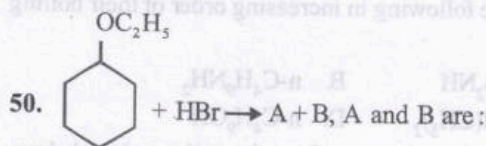
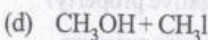
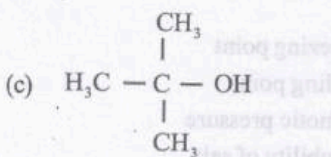
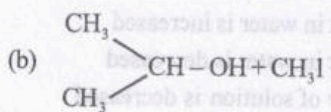
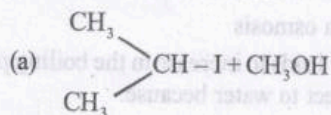
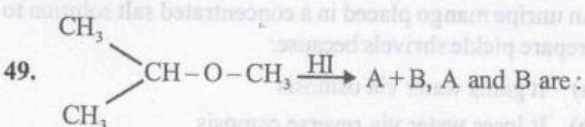
- (a) $\text{A} = \text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$, $\text{B} = \text{C}_6\text{H}_5\text{CH}_2\text{NH}-\text{CH}_3$
 (b) $\text{A} = \text{C}_6\text{H}_5\text{CH}_3$, $\text{B} = \text{C}_6\text{H}_5\text{CH}_2\text{CH}_3$
 (c) $\text{A} = \text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$,

(d) $\text{A} = \text{C}_6\text{H}_5\text{CH}_3$, $\text{B} = \text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{CH}_3$

33. Out of the following compounds, which is the most basic in aqueous solution?

- (a) CH_3-NH_2 (b) $(\text{CH}_3)_2\text{NH}$
 (c) $(\text{CH}_3)_3\text{N}$ (d) $\text{C}_6\text{H}_5\text{NH}_2$

34. Arrange the following in increasing order of their boiling points:
A. $(C_2H_5)_2NH$ B. $n-C_4H_9NH_2$
C. $C_2H_5N(CH_3)_2$ D. $n-C_4H_9OH$
Choose the correct answer from the options given below:
(a) $B < C < A < D$ (b) $C < B < A < D$
(c) $C < A < B < D$ (d) $C < D < B < A$
35. Which of the following is an essential amino acid?
(a) Glycine (b) Alanine
(c) Glutamine (d) Valine
36. In nucleic acids, the Nucleotides are joined together by
(a) Glycosidic linkage
(b) Phosphodiester linkage
(c) Hydrogen bonds
(d) Weak intermolecular forces
37. The letter 'D' in carbohydrates signifies
(a) Dextrorotatory
(b) Configuration
(c) Diamagnetic character
(d) Optical activity
38. Which of the following monomeric pair is used to make polymer Nylon 6, 6?
(a) Hexane-1, 6 dioic acid and Hexane-1, 6-diamine
(b) Ethane-1, 2-dioic acid and Benzene-1, 4-dicarboxylic Acid
(c) Urea and Methanal
(d) Phenol and Methanol
39. Which amongst the following antibiotics is an example of narrow spectrum antibiotic?
(a) Vancomycin
(b) Chloramphenicol
(c) Amoxycillin
(d) Penicillin G
40. Which of the following polymers are obtained by chain growth polymerisation?
(A) Orlon (B) Nylon
(C) Teflon (D) Nylon 2 - nylon 6
(E) Dacron
Choose the correct answer from the options given below:
(a) A, E only (b) A, C only
(c) A, D only (d) C, E only
41. Isotonic solutions are the solutions with:
(a) Same vapour pressure
(b) Same temperature
(c) Same osmotic pressure
(d) Same volume
42. An unripe mango placed in a concentrated salt solution to prepare pickle shrivels because:
(a) It gains water via osmosis
(b) It loses water via reverse osmosis
(c) It gains water via reverse osmosis
(d) It loses water via osmosis
43. Adding a salt to water leads to increase in the boiling point of solution with respect to water because:
(a) Vapour pressure of solution is increased
(b) Solubility of salt in water is increased
(c) Solubility of salt in water is decreased
(d) Vapour pressure of solution is decreased
44. Salt is used to clear snow on the roads covered with snow to:
(a) Decrease the freezing point
(b) Increase the boiling point
(c) Increase the osmotic pressure
(d) Increase the solubility of salt
45. Which of the following is a colligative property?
(a) Vapour pressure (b) Osmotic pressure
(c) Freezing point (d) Boiling point
- Passage:**
Ethers are class of organic compounds that contain ether group – an oxygen atom connected to two alkyl groups or aryl groups. They have the general formula $R-O-R'$, where R and R' represents the alkyl or aryl groups. Ether, like water have a tetrahedral geometry i.e., oxygen is sp^3 hybridised. The C-O-C bond angle in ethers is slightly greater than the tetrahedral angle due to repulsive interactions between the two bulky groups when they are attached to oxygen.
46. Which of the following cannot be made by using Williamson Synthesis?
(a) Methoxybenzene
(b) Benzyl p-nitro phenyl ether
(c) tert-Butyl methyl ether
(d) Di-tert-Butyl ether
47. The IUPAC name of the ether
 $CH_2=CH-CH_2-O-CH_3$ is
(a) Alkyl methyl ether
(b) 1-Methoxyprop-2-ene
(c) 3-Methoxyprop-1-ene
(d) Vinyl dimethyl ether
48. Dehydration of alcohol to ethers is catalysed by:
(a) Conc. H_2SO_4 at 413 K
(b) Hot & NaOH
(c) Hot & HBr
(d) Hot & HNO_3



46. Which of the following cannot be made by using Williamson synthesis?

(a) Methyl benzoate
(b) Benzyl p-nitro phenyl ether
(c) tert-Butyl methyl ether
(d) Di-tert-butyl ether

47. The IUPAC name of the ether $\text{CH}_3-\text{CH}(\text{CH}_3)-\text{O}-\text{CH}_2\text{CH}_3$ is

- (a) Ethyl methyl ether
(b) 1-methoxypropane
(c) 1-methoxypropane-1-ene
(d) Vinyl dimethyl ether

48. Dehydration of alcohol to ether is catalysed by

- (a) Conc. H_2SO_4 at 413 K
(b) HCl & NaOH
(c) HCl & HBr
(d) HCl & HNO_3

49. Arrange the following in increasing order of boiling points:

- (a) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$, $\text{C}_2\text{H}_5\text{I}$
(b) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$, $\text{C}_2\text{H}_5\text{I}$
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(d) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$, $\text{C}_2\text{H}_5\text{I}$

50. Arrange the following in increasing order of boiling points:

- (a) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$, $\text{C}_2\text{H}_5\text{I}$
(b) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$, $\text{C}_2\text{H}_5\text{I}$
(c) $\text{C}_2\text{H}_5\text{OH}$, $\text{C}_2\text{H}_5\text{OC}_2\text{H}_5$, $\text{C}_2\text{H}_5\text{I}$
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35. Which of the following is not a nucleoside?

- (a) Glycine
(b) Alanine
(c) Glutamine
(d) Valine

36. In nucleic acids, the nucleotides are joined together by

- (a) Glycosidic linkage
(b) Phosphodiester linkage
(c) Hydrogen bonds
(d) Weak intermolecular forces

37. The letter 'D' in carbohydrates signifies

- (a) Dextrorotatory
(b) Configuration
(c) Diamagnetic character
(d) Optical activity

38. Which of the following monomers are used to make polymer Nylon 6, 6?

- (a) Hexane-1, 6-diamine and Hexanoic acid
(b) Ethane-1, 2-diamine and Hexanoic acid
(c) Urea and Methanol
(d) Phenol and Methanol

39. Which amongst the following antibiotics is an example of narrow spectrum antibiotic?

- (a) Vancomycin
(b) Chloramphenicol
(c) Amoxycillin
(d) Penicillin G

40. Which of the following polymers are obtained by chain growth polymerisation?

- (A) Orlon
(B) Nylon
(C) Teflon
(D) Nylon 2-nylon 6

Choose the correct answer from the options given below:

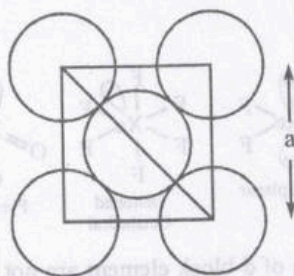
- (a) A, E only
(b) A, C only
(c) A, D only
(d) C, E only

41. Isotonic solutions are the solutions with:

- (a) Same vapour pressure
(b) Same temperature
(c) Same osmotic pressure
(d) Same volume

Hints & Explanations

1. (c) In fcc unit cell, atoms are present at the corners and the middle of each face of the unit cell :



$$\sqrt{2}a = 4r; r = \frac{a}{2\sqrt{2}}$$

2. (a) In ferrimagnetic substance; unequal number of unpaired electrons are aligned in opposite directions and does not have zero magnetic moment.

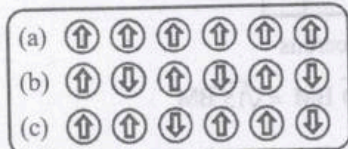
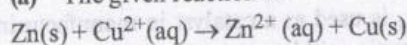


Fig. : Schematic alignment of magnetic moments in (a) ferromagnetic (b) antiferromagnetic and (c) ferrimagnetic.

3. (c) Cu is present at fcc, so $z = 4$; Ag is present at edge centre, so $z = 12 \times 1/4 = 3$; Au is present at bcc, so $z = 1$. Therefore ; formula of alloy is $\text{Cu}_4\text{Ag}_3\text{Au}$

4. (a) The given reaction is :



$$\Delta G^\circ = -nFE^\circ$$

For given cell reaction, $n = 2$

$$E_{\text{cell}}^\circ = E_{\text{cathode}}^\circ - E_{\text{anode}}^\circ$$

$$= 0.34 - (-0.76) = 1.1 \text{ V}$$

$$\Delta G^\circ = -2 \times 96500 \times 1.1$$

$$= -212.3 \text{ kJ/mol}$$

5. (b) Charge $Q = it$

$$= 5 \times 193 = 965 \text{ C}$$

$$= \frac{965}{96500} = 0.01 \text{ F}$$

1 F = charge of 1 mole electrons

0.01 F = charge of 0.01 mole electrons

= charge of $6.02 \times 10^{23} \times 0.01$ electrons

= charge of 6.02×10^{21} electrons

6. (c) It states that at infinite dilution, the conductivity of electrolytic solution is equal to the sum of conductivities of individual ions which are present in electrolyte.

7. (c) For first order reaction : $K = \frac{2.303}{t} \log \frac{[A]_0}{[A]_t}$

$$\frac{2.303}{60} \log \frac{4[A]_0}{[A]_0} \Rightarrow 0.0231$$

$$t_{1/2} = \frac{0.693}{K} = \frac{0.693}{0.0231}$$

$$t_{1/2} = 30 \text{ min}$$

8. (b) For first order reaction

$$t = \frac{2.303}{k} \log \frac{[A]_0}{[A]_t}$$

$$\text{at } t = 0; a_0 = 100 \text{ M}$$

$$\text{at } t_{99.9\%}; a_0 - x$$

$$= 100 - 99.9 = 0.1$$

$$t_{99.9} = \frac{2.303}{k} \log \left[\frac{100}{0.1} \right] = \frac{3 \times 2.303}{k} = \frac{6.9}{k}$$

$$\text{Since } t_{1/2} = \frac{0.693}{k}$$

$$t_{99.9} = \left(\frac{0.693}{k} \right) \times 10$$

$$t_{99.9} = 10t_{1/2}$$

9. (c) Catalyst affects activation energy of any chemical reaction.

Catalyst increases rate of reaction by decreasing the activation energy of reaction.

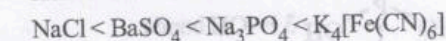
10. (b) A-II, B-I, C-IV, D-III

11. (d) Since highly diluted KI is added into AgNO_3 solution, the resultant colloidal solution will be positive charged due to excess of Ag^+ .

This positively charged sol will be coagulated by anion of electrolyte.

Electrolyte having anion with higher negative charge will have more ease of coagulation.

Hence order will be

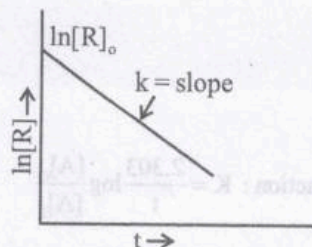


12. (b) On increasing the temperature, physical adsorption is converted to chemisorption as physisorption is an exothermic process.

13. (Na) For first order reaction.

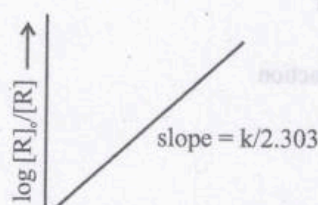
$$\ln[R] = \ln[R]_0 - kt \quad \dots (1)$$

$$y = C + mx$$



A plot between $\ln[R]$ and t for a first order reaction

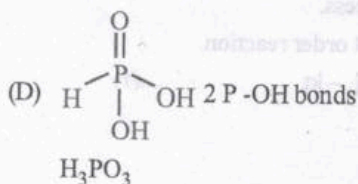
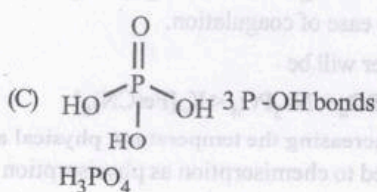
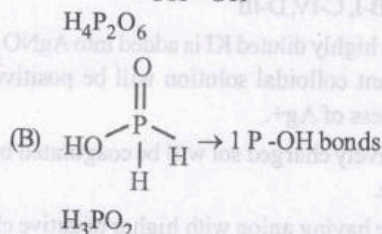
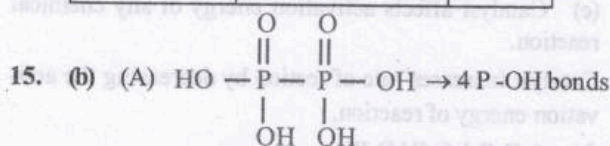
$$\log \frac{[R]_0}{[R]} = \frac{k}{2.303} \times \frac{1}{t}$$



Plot of $\log [R]_0/[R]$ vs time for a first order reaction

14. (c)

Name	Composition	Ore of
Malachite	$\text{CuCO}_3 \cdot \text{Cu(OH)}_2$	Cu
Bauxite	AlOx(OH)_{3-3x}	Al
Calamine	ZnCO_3	Zn
Haematite	Fe_2O_3	Fe
Siderite	FeCO_3	Fe

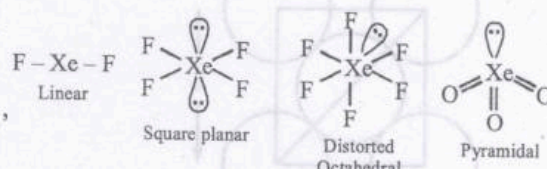


16. (b) Acidic character increases from H_2O to H_2Te .

Acidic character $\propto \frac{1}{\text{bond enthalpy}}$, on moving down the

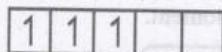
group H-E bond dissociation enthalpy decreases, and the thermal stability of hydrides also decreases from H_2O to H_2Te .

17. (a)



18. (c) All of the ion of d-block element are not coloured. The elements which are unable to show d-d transition, are colourless in nature i.e., d^0 or d^{10} configuration.

19. (b) Electronic configuration of Cr^{3+}



3 unpaired electrons

$$\mu = \sqrt{3(3+2)} \text{ BM} = \sqrt{15} \text{ BM}$$

$$= 3.87 \text{ BM}$$

20. (c) • Maximum oxidation state

• Shown by manganese is +7. e.g. KMnO_4

• Sc^{3+} is colourless due to d_0 configuration

• Brass consist 60% Cu and 40% Zn

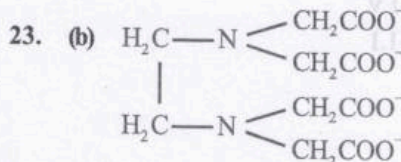
• Lanthanide series consists 14 elements

• V_2O_5 is used as a catalyst in manufacturing of sulphuric acid by contact process.

21. (a) $[\text{Pt}(\text{NH}_3)_2\text{Cl}_2]$

IUPAC - Diammine dichlorido platinum (II)

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



Donor atoms in ethylene diamine tetra acetate ions are two N and four O atoms.

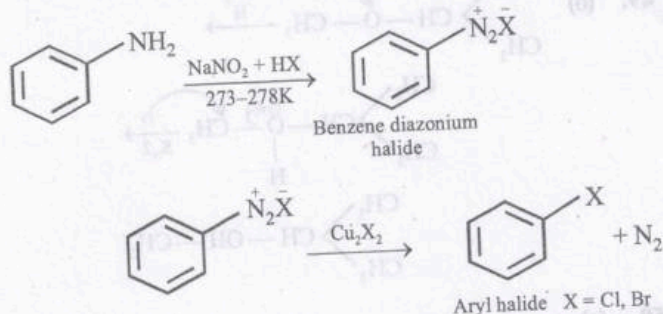
24. (c) $[\text{M}(\text{A})_6]$

Type of complex cannot show geometrical isomerism.

25. (c) For $[\text{Co}(\text{H}_2\text{O})_6]^{2+}$

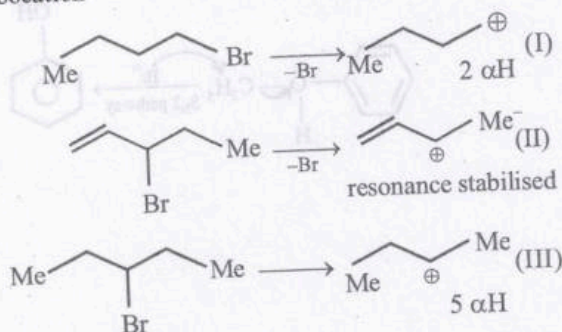
H_2O will act as weak field ligand and Co present in +2 oxidation state. Hence electronic configuration is, $t_{2g}^5 e_g^2$

26. (a) Sandmeyer's reaction:



27. (b) The reactivity of S_N1 reaction depends on the stability of carbocation.

Reactivity towards S_N1 depends upon stability of carbocation



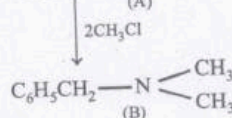
28. (b) In case of aryl alcohol C-O bond is difficult to break as it has partial double bond character due to resonance. Hence it cannot be used for preparation of aryl halide by PCl_3 , PCl_5 or $SOCl_2$.

29. (c) Jones reagent is CrO_3 / H_2SO_4 i.e. chromium trioxide in acidic medium.

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

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

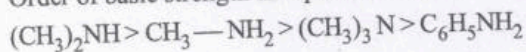
32. (c) $C_6H_5CH_2Cl + NH_3 \longrightarrow C_6H_5CH_2NH_2 + HCl$ (A)



33. (b) Order of basic strength of amines depends on two factors:

- (1) Availability of lone pair
- (2) Stability of conjugate acid formed in an aqueous solution.

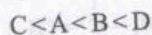
Order of basic strength in aqueous solution:



34. (c) Primary Secondary amines show intermolecular H-bonding while tertiary amine not able to show due to absence of free Hydrogen.

$\therefore$ The boiling order of amine is $1^\circ > 2^\circ > 3^\circ$

The boiling point of alcohol with some no. of carbon is higher than amines due to stronger H-bonding. Hence order is;

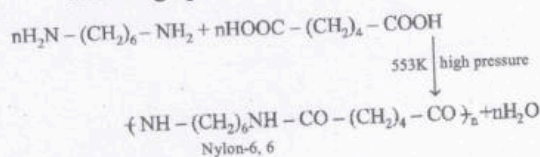


35. (d) Valine is an essential amino acid as it cannot be synthesised in body.

36. (b) In Nucleic Acids, the nucleotides are joined together by phosphodiester linkage between 5' and 3' carbon atom of pentose sugar.

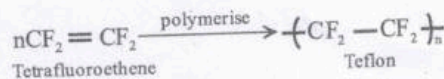
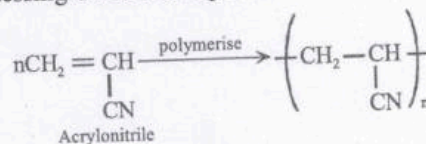
37. (b) The letter 'D' in carbohydrates signifies the substitution orientation at a centre of chirality i.e., configuration.

38. (a) Nylon 6, 6 is formed by the condensation polymerisation of hexamethylene diamine with adipic acid under high pressure and at high temperature.



39. (d) Narrow spectrum antibiotics are effective mainly against Gram-positive or gram-negative bacteria.
eg: Penicillin G.

40. (b) Chain growth polymers or addition polymers are formed by the repeated addition of monomers molecules possessing double or triple bonds.



41. (c) Isotonic solutions have same osmotic pressure.

42. (d) In osmosis flow of solvent takes place from dilute solution to concentrated solution.

43. (d) On addition of salt to water, it will decrease the tendency to form vapour. Vapour pressure decreases as a result boiling point of solution increases.

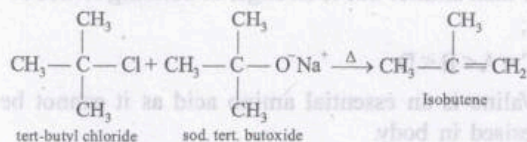
44. (a) Salt is used to lower the freezing point of water. Hence, salt is used to clear snow on the roads covered with snow to decrease the freezing point.

45. (a) Osmotic pressure is a colligative property as it depends on the number of particles present in the solution.

46. (d) Williamson's synthesis:



3°-alkyl Halide not form ether actually they undergo elimination reaction.



47. (c) $\text{CH}_2=\text{CH}=\text{CH}_2-\text{O}-\text{CH}_3$ IUPAC Name of ether is : 3-methoxyprop-1-ene.

48. (c) Dehydration of alcohols into ether take place in presence of Conc. H_2SO_4 at 140°C

