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DO RIGHT FOR GENUINE EDUCATION

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NEET EXAMINATION – 2022

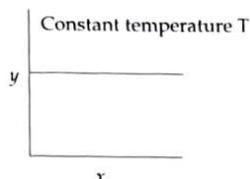
VERSION :
T6

DATE :- 17-07-2021

TIME : 02.00 PM TO 05.20 PM

CHEMISTRY - SECTION - A

51. The given graph is a representation of kinetics of a reaction.



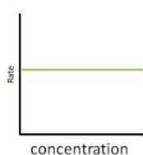
The y and x axes for zero and first order reactions, respectively are

- 1) zero order (y=concentration and x=time) first order (y=rate constant and x=concentration)
- 2) zero order (y=rate and x=concentration), first order (y= $t_{1/2}$ and x= concentration)
- 3) zero order (y=rate and x= concentration) first order (y=rate and x= $t_{1/2}$)
- 4) zero order (y=concentration and x=time), first order (y= $t_{1/2}$ and x=concentration)

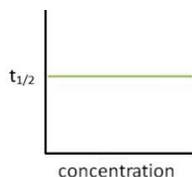
Ans. 2

Sol. For zero order reaction

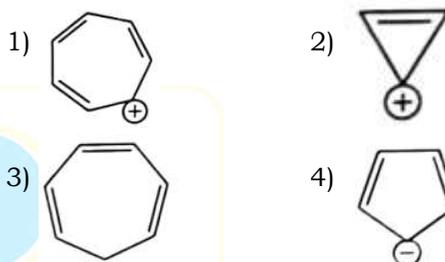
$$\text{Rate} \propto a^0$$



For 1st order reaction $t_{1/2} \propto a^0$

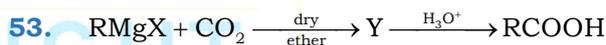


52. Which compound amongst the following is not an aromatic compound?



Ans. 3

Sol. 1, 2 and 4 compounds are aromatic and 3 compound is non-aromatic



What is Y in the above reaction?

- 1) $\text{R}_3\text{CO}^-\text{Mg}^+\text{X}$
- 2) RCOO^-X^+
- 3) $(\text{RCOO})_2\text{Mg}$
- 4) $\text{RCOO}^-\text{Mg}^+\text{X}$

Ans. 4

Sol. $\text{Y} = \text{R} - \text{COO}^-\text{Mg}^+\text{x}$

54. Which of the following statement is not correct about diborane?

- 1) The four terminal B-H bonds are two centre two electron bonds.
- 2) The four terminal Hydrogen atoms and the two Boron atoms lie in one plane.
- 3) Both the Boron atoms are sp^2 hybridised.
- 4) There are two 3-centre-2-electron bonds.

Ans. 3

Sol. in diborane both borons undergoes sp^3 hybridization

55. Gadolinium has low value of third ionisation enthalpy because of
- 1) high exchange enthalpy
 - 2) high electronegativity
 - 3) high basic character
 - 4) small size

Ans. 1

Sol. ${}_{64}\text{Gd}$ Electronic configuration is $4s^7 5d^1 6s^2$
Half filled Electronic configuration is will exhibit more exchange enthalpy

56. Which one is not correct mathematical equation for Dalton's Law of partial pressure? Here p = total pressure of gaseous mixture.

1) $p = n_1 \frac{RT}{V} + n_2 \frac{RT}{V} + n_3 \frac{RT}{V}$

2) $p_i = x_i p$, where

p_i = partial pressure of i^{th} gas

x_i = mole fraction of i^{th} gas in gaseous mixture

3) $p_i = x_i p_i^0$, where

x_i = mole fraction of i^{th} gas in gaseous mixture

p_i^0 = pressure of i^{th} gas in pure state

4) $p = p_1 + p_2 + p_3$

Ans. 3

Sol. Partial pressure of i^{th} gas in gaseous mixture
 $P_i = X_i P$

57. Given below are two statements:

Statement-I:

The boiling points of the following hydrides of group 16 elements increases in the order:
 $\text{H}_2\text{O} < \text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$.

Statement-II:

The boiling points of these hydrides increase with increase in molar mass.

In the light of the above statements, choose the most appropriate answer from the options given below:

- 1) Both Statement-I and Statement-II are incorrect
- 2) Statement-I is correct but Statement-II is incorrect
- 3) Statement-I is incorrect but Statement-II is correct
- 4) Both Statement-I and Statement-II are correct

Ans. 1

Sol. BP order $\text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{O}$
 213K 232K 269K 373K

due to H-bond H_2O boiling point is more

58. Given below are two statements:

Statement-I:

The acidic strength of monosubstituted nitrophenol is higher than phenol because of electron withdrawing nitro group.

Statement-II:

o-nitrophenol, m-nitrophenol and p-nitrophenol will have same acidic strength as they have one nitro group attached to the phenolic ring.

In the light of the above statements, choose the most appropriate answer from the options given below:

- 1) Both Statement-I and Statement-II are incorrect
- 2) Statement-I is correct but Statement-II is incorrect
- 3) Statement-I is incorrect but Statement-II is correct
- 4) Both Statement-I and Statement-II are correct

Ans. 2

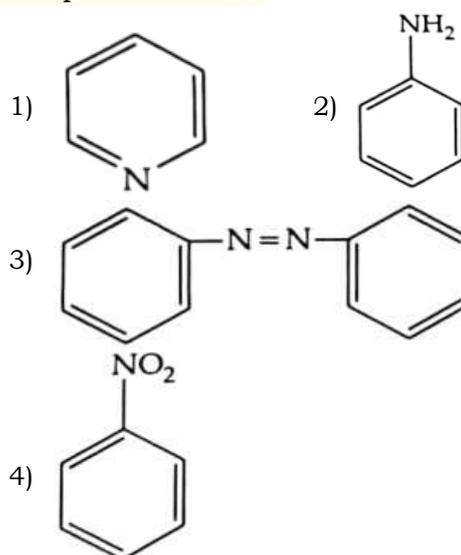
Sol. Statement I: Acidic strength order:

Nitrophenol > Phenol

Statement II: Acidic strength order

Paranitrophenol > orthonitrophenol > metanitrophenol

59. The Kjeldhal's method for the estimation of nitrogen can be used to estimate the amount of nitrogen in which one of the following compounds?



Ans. 2

Sol. Kjeldahl's method is not applicable to compounds containing nitrogen in **Nitro** and **Azo** groups and **nitrogen in the ring**

60. Match List-I with List-II.

List-I (Drug class)	List-II (Drug molecule)
(a) Antacids	(i) Salvarsan
(b) Antihistamines	(ii) Morphine
(c) Analgesics	(iii) Cimetidine
(d) Antimicrobials	(iv) Seldane

Choose the correct answer from the options given below:

- 1) (a) - (iii), (b) - (iv), (c) - (ii), (d) - (i)
- 2) (a) - (i), (b) - (iv), (c) - (ii), (d) - (iii)
- 3) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)
- 4) (a) - (iii), (b) - (ii), (c) - (iv), (d) - (i)

Ans. 1

Sol. Antacid - cimetidine

Antihistamine - seldane

Analgesics - Morphine

Antimicrobials - salvarsan

61. The IUPAC name of an element with atomic number 119 is

- 1) unnilennium
- 2) unununnium
- 3) ununoctium
- 4) ununennium

Ans. 4

Sol. Z= 119 ununennium

62. Amongst the following which one will have maximum 'lone pair-lone pair' electron repulsions?

- 1) IF₅
- 2) SF₄
- 3) XeF₂
- 4) ClF₃

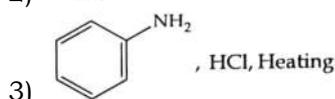
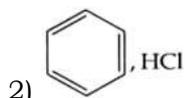
Ans. 3

Sol. According to VSEPR theory L.P-L.P > B.P-L.P > B.P-B.P

In XeF₂ three lonepairs on the central atom and causes more repulsions

63. Which of the following sequence of reactions is suitable to synthesize chlorobenzene?

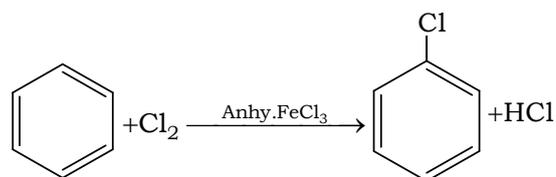
- 1) Phenol, NaNO₂, HCl, CuCl



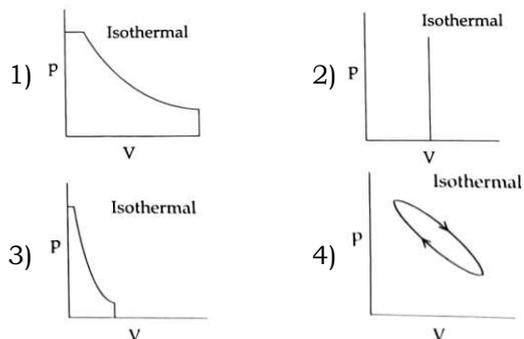
- 4) Benzene, Cl₂, anhydrous FeCl₃

Ans. 4

Sol. Halogenation

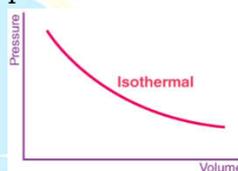


64. Which of the following p-V curve represents maximum work done?



Ans. 1

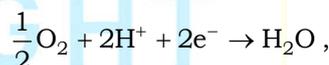
Sol. Maximum work done in Reversible isothermal process



65. Given below are half cell reactions:



$$E_{\text{Mn}^{2+}/\text{MnO}_4^-}^\circ = -1.510\text{V}$$



$$E_{\text{O}_2/\text{H}_2\text{O}}^\circ = +1.223\text{V}$$

Will the permanganate ion, MnO₄⁻ liberate O₂ from water in the presence of an acid?

- 1) No, because E_{cell}^o = -0.287V
- 2) Yes, because E_{cell}^o = +2.733V
- 3) No, because E_{cell}^o = -2.733V
- 4) Yes, because E_{cell}^o = +0.287V

Ans. 4

Sol. Given SOP $E_{\text{Mn}^{2+}/\text{MnO}_4^-}^\circ = -1.510$
 ⇒ SRP $E_{\text{MnO}_4^-/\text{Mn}^{2+}}^\circ = +1.510$ acts as cathode

and SRP $E_{\text{O}_2/\text{H}_2\text{O}}^\circ = +1.223\text{V}$ acts as anode

$$E_{\text{cell}}^\circ = E_{\text{RHS}}^\circ - E_{\text{LHS}}^\circ = 1.510 - 1.223 = +0.287\text{V}$$

66. The IUPAC name of the complex $[\text{Ag}(\text{H}_2\text{O})_2][\text{Ag}(\text{CN})_2]$ is:

- 1) diaquasilver (II) dicyanidoargentate (II)
- 2) dicyanidosilver (I) diaquaargentate(I)
- 3) diaquasilver (I) dicyanidoargentate(I)
- 4) dicyanidosilver (II) diaquaargentate(II)

Ans. 3

Sol. Diaquasilver (I) dicyanidoargentate(I)

67. Identify the incorrect statement from the following

- 1) The oxidation number of K in KO_2 is +4
- 2) Ionisation enthalpy of alkali metals decreases from top to bottom in the group.
- 3) Lithium is the strongest reducing agent among the alkali metals
- 4) Alkali metals react with water to form their hydroxides.

Ans. 1

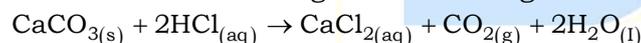
Sol. KO_2 potassium superoxide ($\text{K}^+\text{O}_2^{-1}$)

Potassium oxidation number = +1

Or

IA group elements oxidation number is = +1

68. What mass of 95% pure CaCO_3 will be required to neutralise 50mL of 0.5M HCl solution according to the following reaction ?



[Calculate upto second place of decimal point]

- 1) 1.32g
- 2) 3.65g
- 3) 9.50g
- 4) 1.25g

Ans. 1

Sol. Meq of CaCO_3 = meq of HCl

$$\frac{\text{wt}}{\text{Eq.wt}} \times 1000 = M \times n_f \times V_{\text{ml}}$$

$$\text{wt} = \frac{M \times n_f \times V_{\text{ml}} \times \text{Eq.wt}}{1000}$$

$$\text{wt} = \frac{0.5 \times 1 \times 50 \times 50}{1000}$$

$$\text{wt} = 1.25\text{g}$$

$$95\% \text{ of pure } \text{CaCO}_3 \rightarrow \frac{100 \times 1.25}{95} = 1.32\text{g}$$

69. Given below are two statements:

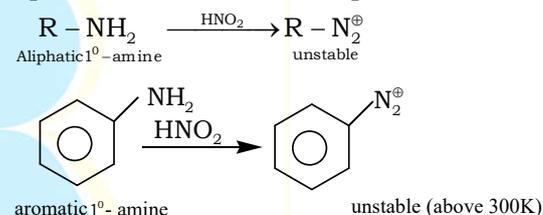
Statement I: Primary aliphatic amines react with HNO_2 to give unstable diazonium salts.

Statement II: Primary aromatic amines react with HNO_2 to form diazonium salts which are stable even above 300K. In the light of the above statements, choose the most appropriate answer from the option given below:

- 1) Both statement I and Statement II are incorrect
- 2) Statement I is correct but statement II is incorrect.
- 3) Statement I is incorrect but Statement II is correct.
- 4) Both Statement I and Statement II are correct

Ans. 2

Sol. Statement I is correct, Statement II is incorrect because aromatic primary amines are stable up to zero to 5°C that is up to 278°K



70. Which statement regarding polymers is not correct?

- 1) Fibers possess high tensile strength
- 2) Thermoplastic polymers are capable of repeatedly softening and hardening on heating cooling respectively.
- 3) Thermosetting polymers are reusable.
- 4) Elastomers have polymer chains held together by weak intermolecular forces

Ans. 3

Sol. Thermosetting polymers cannot be reused

71. The incorrect statement regarding chirality is:

- 1) The product obtained by $\text{S}_{\text{N}}2$ reaction of haloalkane having chirality at the reactive site shows inversion of configuration.
- 2) Enantiomers are superimposable mirror images on each other.
- 3) A racemic mixture shows zero optical rotation
- 4) $\text{S}_{\text{N}}1$ reaction yields 1:1 mixture of both enantiomers

Ans. 2

Sol. Enantiomers are Non-superimposable mirror images on each other.

72. Given below are two statements:

Statement I:

In the coagulation of a negative sol, the flocculating power of the three given ions is in the order-



Statement II:

In the coagulation of a positive sol, the flocculating power of the three given salts is in the order-



In the light of the above statements, choose the most appropriate answer form the options given below:

- 1) Both Statements I and Statements II are incorrect
- 2) Statements I is correct but Statements II is incorrect
- 3) Statements I is incorrect but Statements II is correct.
- 4) Both Statements I and Statements II are correct.

Ans. 2

Sol. In the coagulation of a -ve sol, the flocculating power $\text{Al}^{+3} > \text{Ba}^{+2} > \text{Na}^{+1}$
In the coagulation of a +ve sol, the flocculating power $\text{PO}_4^{3-} > \text{SO}_4^{2-} > \text{Cl}^-$

73. Match List-I with List-II.

	List-I (Hydrides)		List-II (Nature)
a)	MgH ₂	i)	Electron precise
b)	GeH ₄	ii)	Electron deficient
c)	B ₂ H ₆	iii)	Electron rich
d)	HF	iv)	Ionic

Choose the correct answer form the options given below:

- 1) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)
- 2) (a) – (i), (b) – (ii), (c) – (iv), (d) – (iii)
- 3) (a) – (ii), (b) – (iii), (c) – (iv), (d) – (i)
- 4) (a) – (iv), (b) – (i), (c) – (ii), (d) – (iii)

Ans. 4

Sol. MgH₂ : IONIC, but predominantly covalent in Nature
GeH₄ : Electron precise

B₂H₆ : Electron deficient

HF : Electron rich

74. Match List-I with List-II

	List-I		List-II
a)	Li	i)	Absorbent for carbon dioxide
b)	Na	ii)	Electrochemical cells
c)	KOH	iii)	Coolant in fast breeder reactors
d)	Cs	iv)	Photoelectric cell

Choose the correct answer form the options given below:

- 1) (a) – (iii), (b) – (iv), (c) – (ii), (d) – (i)
- 2) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii)
- 3) (a) – (ii), (b) – (iii), (c) – (i), (d) – (iv)
- 4) (a) – (iv), (b) – (i), (c) – (iii), (d) – (ii)

Ans. 3

Sol. Li : Electrochemical cells
Na : Coolant in fast breeder reactions
KOH : Absorbent for CO₂
Cs : Photoelectric cell

75. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason(R)

Assertion (A)

In a particular point defect, an ionic solid is electrically neutral, even if few of its cations are missing from its unit cells.

Reason (R)

In a ionic solid, Frenkel defect arises due to dislocation of cation form its lattice site to interstitial site, maintaining overall electrical neutrality.

In the light of the above statements, choose the most appropriate answer form the options given below:

- 1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- 2) (A) is correct but (R) is not correct
- 3) (A) is not correct but (R) is correct
- 4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

Ans. 4

Sol. Conceptual

76. The incorrect statement regarding enzymes is:
- 1) Like chemical catalysts enzymes reduce the activation energy of bio processes
 - 2) Enzymes are polysaccharides
 - 3) Enzymes are very specific for a particular reaction and substrate
 - 4) Enzymes are biocatalysts

Ans. 2

Sol. Conceptual

77. Match List-I with List-II

	List-I (Products formed)		List-II (Reaction of carbonyl compound with)
a)	Cyanohydrin	i)	NH ₂ OH
b)	Acetal	ii)	RNH ₂
c)	Schiff's base	iii)	Alcohol
d)	Oxime	iv)	HCN

Choose the correct answer from the options given below:

- 1) (a) – (ii), (b) – (iii), (c) – (iv), (d) – (i)
- 2) (a) – (i), (b) – (iii), (c) – (ii), (d) – (iv)
- 3) (a) – (iv), (b) – (iii), (c) – (ii), (d) – (i)
- 4) (a) – (iii), (b) – (iv), (c) – (ii), (d) – (i)

Ans. 3

Sol. Conceptual

78. In one molal solution that contains 0.5 mole of a solute, there is
- 1) 500g of solvent
 - 2) 100 mL of solvent
 - 3) 1000g of solvent
 - 4) 500 mL of solvent

Ans. 1

Sol. $m = n \times \frac{1000}{\text{wt of solvent}}$

$$\text{wt of solvent} = n \times \frac{1000}{m}$$

$$0.5 \times \frac{1000}{1} = 500$$

$$\text{wt} = 500\text{g of solvent}$$

79. Choose the correct statement:

- 1) Diamond is covalent and graphite is ionic.
- 2) Diamond is sp³ hybridised and graphite is sp² hybridized.
- 3) Both diamond and graphite are used as dry lubricants
- 4) Diamond and graphite have two dimensional network

Ans. 2

Sol. Conceptual

80. Which amongst the following is incorrect statement?

- 1) C₂ molecule has four electrons in its two degenerate π molecular orbitals.
- 2) H₂⁺ ions has one electron
- 3) O₂⁺ ion is diamagnetic
- 4) The bond orders of O₂⁺, O₂, O₂⁻ and O₂²⁻ are 2.5, 2, 1.5 and 1, respectively

Ans. 3

Sol. Conceptual

81. Given below are two statements: One is labelled as

Assertion (A) and the other is labelled as Reason (R)

Assertion (A): ICl is more reactive than I₂

Reason(R): I-Cl bond is weaker than I-I bond.

In the light of the above statements, choose the most appropriate answer form the options below

- 1) Both (A) and (R) are correct but (R) is not the correct explanation of (A)
- 2) (A) is correct but (R) is not correct
- 3) (A) is not correct but (R) is correct
- 4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

Ans. 4

Sol. Conceptual

82. Given below are two statements:

Statement I: The boiling points of aldehydes and ketones are higher than hydrocarbons of comparable molecular masses because of weak molecular association in aldehydes and ketones due to dipole-dipole interactions

Statement II: The boiling points of aldehydes and ketones are lower than the alcohols of similar molecular masses due to the absence of H-bonding

In the light of the above statements, choose the most appropriate answer from the options given below:

- 1) Both Statement I and Statement II are incorrect.
- 2) Statement I is correct but Statement II is incorrect
- 3) Statement I is incorrect but Statement II is correct
- 4) Both statement I and Statement II are correct

Ans. 3

Sol. Conceptual

83. The pH of the solution containing 50mL each of 0.10M sodium acetate and 0.01 M acetic acid is

[Given pK_a of $CH_3COOH = 4.57$]

- 1) 3.57
- 2) 4.57
- 3) 2.57
- 4) 5.57

Ans. 4

Sol.
$$p^H = p^{ka} + \log \left[\frac{\text{salt}}{\text{Acid}} \right]$$

$$p^H = 4.57 + \log \left[\frac{0.10}{0.01} \right]$$

$$= 4.57 + 1$$

$$p^H = 5.57$$

84. Identify the incorrect statement from the following

- 1) All the five 4d orbitals have shapes similar to the respective 3d orbitals.
- 2) In an atom, all the five 3d orbitals are equal in energy in free state.
- 3) The shapes of d_{xy} , d_{yz} , and d_{zx} orbitals are similar to each other and $d_{x^2-y^2}$ and d_{z^2} are similar to each other
- 4) All the five 5d orbitals are different in size when compared to the respective 4d orbitals

Ans. 3

Sol. Shapes of d_{xy} , d_{yz} , d_{zx} are similar to each other but $d_{x^2-y^2}$ and d_{z^2} are not similar each other.

85. At 298K, the standard electrode potentials of Cu^{2+}/Cu , Zn^{2+}/Zn , Fe^{2+}/Fe and Ag^+/Ag are 0.34V, -0.76V, -0.44V and 0.80V, respectively. On the basis of standard electrode potential, predict Which of the following reaction can not occur?

- 1) $CuSO_4(aq) + Fe(s) \rightarrow FeSO_4(aq) + Cu(s)$
- 2) $FeSO_4(aq) + Zn(s) \rightarrow ZnSO_4(aq) + Fe(s)$
- 3) $2CuSO_4(aq) + 2Ag(s) \rightarrow 2Cu(s) + Ag_2SO_4(aq)$
- 4) $CuSO_4(aq) + Zn(s) \rightarrow ZnSO_4(aq) + Cu(s)$

Ans. 3

Sol. $Cu^{+2}/Cu = 0.34v$ R.A

$Ag^+/Ag = 0.80v$ O.A

Cu has low S.R.P so it reduces $Ag^+ \rightarrow Ag$

CHEMISTRY - SECTION - B

86. The order of energy absorbed which is responsible for the colour of complexes

(A) $[Ni(H_2O)_2(en)_2]^{2+}$

(B) $[Ni(H_2O)_4(en)]^{2+}$ and

(C) $[Ni(en)_3]^{2+}$

1) (C) > (B) > (A) 2) (C) > (A) > (B)

3) (B) > (A) > (C) 4) (A) > (B) > (C)

Ans. 2

Sol. Energy absorbed \propto strength of ligand
C > A > B

87. A 10.0L flask contains 64 g of oxygen at 27°C. (Assume O_2 gas is behaving ideally). The pressure inside the flask in bar is (Given $R=0.0831 \text{ L bar K}^{-1} \text{ mol}^{-1}$)

- 1) 498.6
- 2) 49.8
- 3) 4.9
- 4) 2.5

Ans. 3

Sol. $V = 10 \text{ Lit}$

$W_{O_2} = 64 \text{ gm}$ M. wt = 32

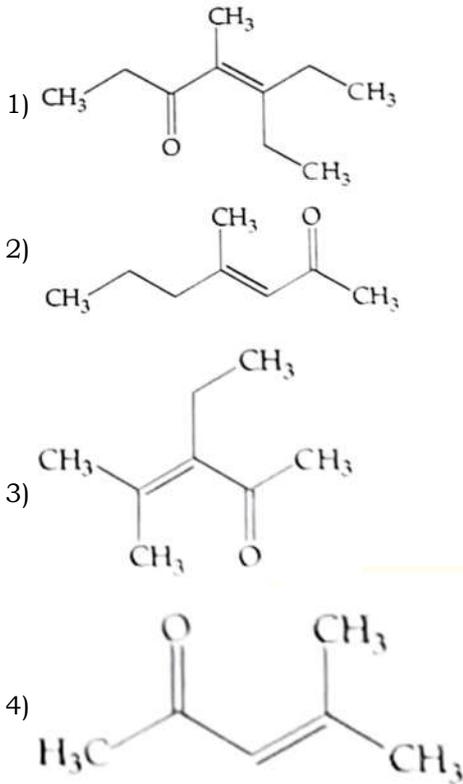
$T = 27^\circ C = 300K$

$P = ?$

$$PV = \frac{w RT}{M}$$

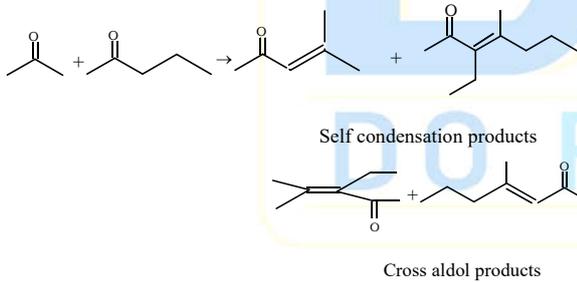
$$PV = \frac{64 \times 0.0831 \times 300}{10 \times 32} = 4.9$$

88. Which one of the following is not formed when acetone reacts with 2-pentanone in the presence of dilute NaOH followed by heating

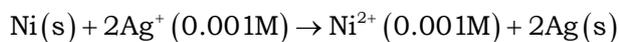


Ans. 1

Sol. Cross-aldol condensation



89. Find the emf of the cell in which the following reaction takes place at 298K

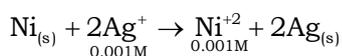


(Given that $E_{\text{cell}}^0 = 10.5\text{V}$, $\frac{2.303RT}{F} = 0.059$ at 298K)

- 1) 1.385V 2) 0.9615V 3) 1.05V 4) 1.0385V

Ans. NO OPTION

Sol. $E_{\text{cell}}^0 = 10.5$



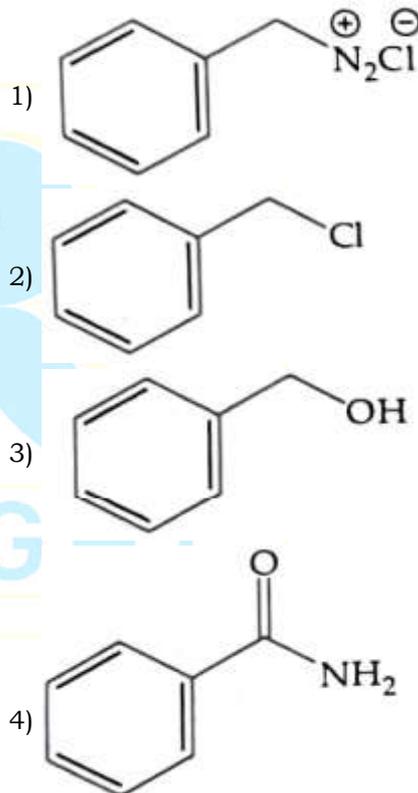
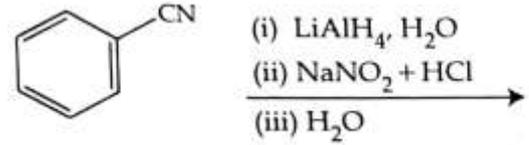
$$E_{\text{cell}} = E_{\text{cell}}^0 - \frac{0.059}{2} \log \frac{[\text{Ni}^{2+}]}{[\text{Ag}^+]^2}$$

$$E_{\text{cell}} = 10.5 - \frac{0.059}{2} \log \frac{0.001}{(0.001)^2}$$

$$E_{\text{cell}} = 10.5 - \frac{0.059 \times 3}{2} = 9.615$$

(Grace: E_{cell}^0 given as 10.5V **but correct is 1.05V so correct answer is 0.9615**)

90. The product formed from the following reaction sequence is



Ans. 3

Sol. Conceptual

91. Copper crystallises in fcc unit cell with cell edge length of 3.608×10^{-8} cm. The density of copper of 8.92g cm^{-3} . Calculate the atomic mass of copper.

- 1) 31.55 u 2) 60 u
3) 65 u 4) 63.1 u

Ans. 4

Sol. FCC Z=4
a = 3.608×10^{-8} cm
d = 8.92g cm^{-3}

At weight of Cu (M)=?

$$d = \frac{ZM}{N_A a^3}$$

$$M = \frac{8.92 \times 6.023 \times 10^{23} \times (3.608 \times 10^{-8})^3}{4}$$

$$M = 63.1$$

92. $3O_2(g) \rightleftharpoons 2O_3(g)$ for the above reaction at 298 K, K_C is found to be 3.0×10^{-59} . If the concentration of O_2 at equilibrium is 0.040 M then concentration of O_3 in M is

- 1) 1.9×10^{-63} 2) 2.4×10^{31}
3) 1.2×10^{21} 4) 4.38×10^{-32}

Ans. 4

Sol. $3O_{2(g)} \rightleftharpoons 2O_{3(g)}$ $K_c = 3 \times 10^{-59}$

$$[O_2] = 0.04 \text{ M}$$

$$[O_3] = ?$$

$$K_c = \frac{[O_3]^2}{[O_2]^3}$$

$$3 \times 10^{-59} = \frac{[O_3]^2}{[0.04]^3}$$

$$[O_3]^2 = 3 \times 10^{-59} \times 64 \times 10^{-6}$$

$$[O_3]^2 = 19.2 \times 10^{-64}$$

$$[O_3]^2 = \sqrt{19.2 \times 10^{-64}} = 4.38 \times 10^{-32}$$

93. Given below are two statements:
Statement I : In Lucas test, primary, secondary and tertiary alcohols are distinguished on the basis of their reactivity with conc. $HCl + ZnCl_2$, known as Lucas Reagent.

Statement II: Primary alcohols are most reactive and immediately produce turbidity at room temperature on reaction with Lucas Reagent.

In the light of the above statement, choose the most appropriate answer from the options given below:

- 1) Both Statement I and Statement II are incorrect
2) Statement I is correct but statement II is incorrect
3) Statement I is incorrect but statement II is correct
4) Both statement I and Statement II are correct

Ans. 2

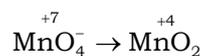
Sol. Conceptual

94. In the neutral or faintly alkaline medium, $KMnO_4$ oxidises iodide into iodate. The change in oxidation state of manganese in this reaction is from

- 1) +6 to +4 2) +7 to +3
3) +6 to +5 4) +7 to +4

Ans. 4

Sol. $2MnO_4^- + H_2O + I^- \rightarrow 2MnO_2 + 2OH^- + IO_3^-$



95. Math List – I with List – II.

	List – I (Ores)		List – II (Composition)
(a)	Haematite	(i)	Fe_3O_4
(b)	Magnetite	(ii)	$ZnCO_3$
(c)	Calamine	(iii)	Fe_2O_3
(d)	Kaolinite	(iv)	$[Al_2(OH)_4Si_2O_5]$

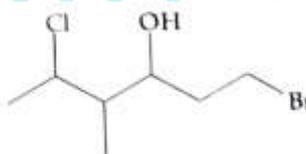
Choose the correct answer from the options given below:

- 1) (a) – (iii), (b) – (i), (c) – (ii), (d) – (iv)
2) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii)
3) (a) – (i), (b) – (iii), (c) – (ii), (d) – (iv)
4) (a) – (i), (b) – (ii), (c) – (iii), (d) – (iv)

Ans. 1

Sol. Conceptual

96. The correct IUPAC name of the following compound is:



- 1) 6-bromo-2-chloro-4-methylhexan-4-ol
2) 1-bromo-4-methyl-5-chlorohexan-3-ol
3) 6-bromo-4-methyl-2-chlorohexan-4-ol
4) 1-bromo-5-chloro-4-methylhexan-3-ol

Ans. 4

Sol. Conceptual

97. If radius of second Bohr orbit of the He^+ ion is 105.8 pm, what is the radius of third Bohr orbit of Li^{2+} ions?
- 1) 15.87 pm 2) 1.587 pm
3) $158.7 \overset{\circ}{\text{A}}$ 4) 158.7 pm

Ans. 4

Sol. He^+ Li^{2+}
 $Z_1 = 2$ $Z_2 = 3$
 $r_1 = 105.8 \text{ pm}$ $r_2 = ?$
 $n_1 = 2$ $n_2 = 3$

$$\frac{r_1}{r_2} = \frac{n_1^2}{n_2^2} \times \frac{Z_2}{Z_1}$$

$$\frac{105.8}{r_{\text{Li}^{2+}}} = \frac{2^2}{3^2} \times \frac{3}{2}$$

$$r_{\text{Li}^{2+}} = 105.8 \times \frac{3}{2} = 158.7 \text{ pm}$$

98. Compound X on reaction with O_3 followed by $\text{Zn}/\text{H}_2\text{O}$ gives formaldehyde and 2-methyl propanal as products. The compound X is:
- 1) 2-Methylbut-1-ene 2) 2-Methylbut-2-ene
3) Pent-2-ene 4) 3-Methylbut-1-ene

Ans. 4

Sol. Conceptual

99. For a first order reaction $\text{A} \rightarrow \text{products}$, initial concentration of A is 0.1 M, which becomes 0.001 M after 5 minutes. Rate constant for the reaction in min^{-1} is
- 1) 0.9212 2) 0.4606
3) 0.2303 4) 1.3818

Ans. 1

Sol. $[\text{R}_0] = 0.1$ $t = 5 \text{ min}$
 $[\text{R}] = 0.01$
 $K = ?$

$$K = \frac{2.303}{t} \log \frac{[\text{R}_0]}{[\text{R}]}$$

$$K = \frac{2.303}{5} \log \frac{0.1}{0.01}$$

$$K = 0.9212$$

100. The pollution due to oxides of sulphur gets enhanced due to the presence of:
- a) Particulate matter b) Ozone
c) hydrocarbons d) hydrogen peroxide
- Choose the most appropriate answer from the options given below:

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

Ans. 1

Sol. Conceptual