Solved Question Paper

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NEET CHEMISTRY 2021 Solved Question Paper

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SECTION - A

51. The incorrect statement among the following is :

(1) Actinoids are highly reactive metals, especially when finely divided.

(2) Actinoid contraction is greater for element to element than Lanthanoid contraction.

(3) Most of the trivalent Lanthanoid ions are colorless in the solid state.

(4) Lanthanoids are good conductors of heat and electricity.

Sol. 3

Fact

52. Given below are two statements:

Statement I:

Aspirin and Paracetamol belong to the class of narcotic analgesics.

Statement II:

Morphine and Heroin are non-narcotic analgesics. In the light of the above statements, choose the correct answer from the options given below.

(1) Statement I is incorrect but Statement II is true.

(2) Both Statement I and Statement II are true.

(3) Both Statmenet I and Statement II are false.

(4) Statement I is correct but Statement II is false.

Sol. 3

Fact

53. **Statement-I :**

Acid strength increases in the order given as HF << HCl << HBr << HI.

Statement II :

As the size of the elements F, Cl, Br, I increases down the group, the bond strength of HF, HCl, HBr and HI decreases and so the acid strength increases.

In the light of the above statements, choose the correct answer from the options given below.

(1) Statement I is incorrect but Statement II is true.

(2) Both Statement I and Statement II are true.

(3) Both Statement I and Statement II are false.

(4) Statement I is correct but Statement II is false.

Sol. 2

In hydra acids acidic strength increases an moving down the group as acid easily release H^+ and conjugate anion stabilise due to decrease in charge density

54. Which one among the following is the correct option for right relationship between C_P and C_V for one mole of ideal gas?

(1) $C_V = RC_P$ (2) $C_P + C_v = R$ (3) $C_P - C_v = R$ (4) $C_P = RC_V$

Sol. 3

$C_P - C_V = R$

55. The correct option for the number of body centred unit cells in all 14 types of Bravais lattice unit cells is:

(1) 3 (2) 7 (3) 5 (4) 2

Sol. 1

Cubic —→ 1BCC
Tetragonal —→ 1BCC
Orthorhombic —→ 1BCC
Total BCC 3

56. Among the following alkaline earth metal halides, one which is covalent and soluble in organic solvents is :

(1) Beryllium chloride (2) Calcium chloride

(3) Strontium chloride (4) Magnesium chloride

Sol. 1

Covalent character directly proportional to the polarisation & Polarisation ∝ charge on cation & anion

Polarisation $\propto \frac{1}{\text{size of cation}}$

Polarisation ∝ size of anion

Here +ve = const

-ve = const

Size of anion = constant

Size of cation : $Be^{+2} < Mg^{+2} < Ca^{+2} < Sr^{+2}$

∴ Polarisation $Be^{+2} > Mg^{+2} > Ca^{+2} > Sr^{+2}$

∴ Covalent character $BeCl_2 > MgCl_2 > CaCl_2 > SrCl_2$

57. Tritium, a radioactive isotope of hydrogen, emits which of the following particles ?

(1) Neutron (n) (2) Beta (β^-)

(3) Alpha (α) (4) Gamma (γ)

Sol. 2

58. The maximum temperature that can be achieved is blast furnace i s :

(1) upto 5000 K (2) upto 1200 K

(3) upto 2200 K (4) upto 1900 K

Sol. 3

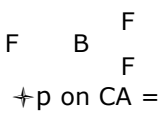
Fact

59. BF_3 is planar and electron deficient compound. Hybridization and number of electrons around the central atom, respectively are :

(1) sp^2 and 8 (2) sp^3 and 4

(3) sp^3 and 6 (4) sp^2 and 6

Sol. 4



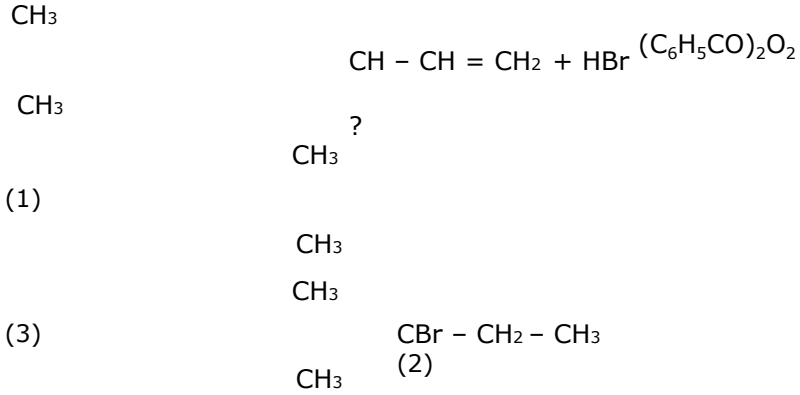
∴p on CA = 0

σ -bond with boron = 3

∴ Stearic number = 3

Hybridization = sp^2

60. The major product of the following chemical reaction is :



(1) $CH_3-CH_2-CH_2-Br$

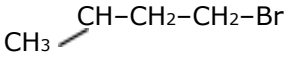
(2) $CBr-CH_2-CH_3$

(3) $CH-CH-CH_3$ (Br)

(4) $CH-CH_2-CH_2-O-COC_6H_5$

Sol. 2

Peroxide effect, major product according to anti markovnikov's rule (based on stability of free radical intermediate)



61. The molar conductance of NaCl, HCl and CH_3COONa at infinite dilution are 126.45, 426.16 and 91.0 S cm^2 mol^{-1} respectively. The molar conductance of CH_3COOH at infinite dilution is. Choose the right option for your answer.

(1) 540.48 S cm^2 mol^{-1} (2) 201.28 S cm^2 mol^{-1}

(3) 390.71 S cm^2 mol^{-1} (4) 698.28 S cm^2 mol^{-1}

Sol. 3

$NaCl \longrightarrow Na^+ + Cl^-$ .... (1)

$HCl \longrightarrow H^+ + Cl^-$ .... (2)

$CH_3COONa \longrightarrow CH_3COO^- + Na^+$ .... (3)

(2) + (3) – (1)

426.16 + 91 – 126.45

= 390.71

62. A particular station of All India Radio, New Delhi, broadcasts on a frequency of 1.368 kHz (kilohertz). The wavelength of the electromagnetic radiation emitted by the transmitter is : [speed of light, $c = 3.0 \times 10^8$ ms^{-1}]

(1) 21.92 cm (2) 219.3 m (3) 219.2 m (4) 2192 m

Sol. 2

$\gamma = C$

$$\lambda = \frac{C}{\gamma}$$

$$\lambda = \frac{3 \times 10^8}{1368 \times 10^3}$$

$\lambda = 219.29 = 219.3$ m

63. Which of the following reactions is the metal displacement reaction ? Choose the right option.

(1) $2Pb(NO_3)_2 \rightarrow 2PbO + 4NO_2 + O_2 \uparrow$ (2) $2KClO_3 \xrightarrow{\Delta} 2KCl + 3O_2$

(3) $Cr_2O_3 + 2Al \xrightarrow{\Delta} Al_2O_3 + 2Cr$ (4) $Fe + 2HCl \rightarrow FeCl_2 + H_2 \uparrow$

Sol. 3

$Cr_2O_3 + 2Al \longrightarrow Al_2O_3 + 2Cr$

64. The right option for the statement. "Tyndall effect is exhibited by". is:

(1) Urea solution (2) NaCl solution

(3) Glucose solution (4) Starch solution

Sol. 4

Tyndall effect shown by starch solution

65. The compound which shows metamerism is:

(1) $C_4H_{10}O$ (2) C_5H_{12} (3) C_3H_8O (4) C_3H_6O

Sol. 1

$C_4H_{10}O$

This molecular formula is applicable for homologous series ether (–O–) a bivalent functional group and as we know ether with minimum four-C shows metamerism.

$CH_3–CH_2–O–CH_2–CH_3$ & $CH_3–O–CH_2–CH_2–CH_3$ are metamers.

66. Match List I with List-II.

List-I	**List-II**
(a) PCl_5	(i) Square pyramidal
(b) SF_6	(ii) Trigonal planar
(c) BrF_5	(iii) Octahedral
(d) BF_3	(iv) Trigonal bipyramidal

Choose the correct answer from the options given below :

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

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

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

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

Sol. 2

	SN(Stearic number)	
PCl_5	5	$\nparallel p = 0$ $\sigma = 5$ Trigonal bipyramidal
SF_6	6	$\nparallel p = 0$ $\sigma = 6$ octahedral
BrF_5	6	$\nparallel p = 1$ $\sigma = 5$ square pyramidal
BF_3	3	$\nparallel p = 0$ $\sigma = 3$ trigonal bipyramidal

67. Which one of the following polymers is prepared by addition polymerisation?

(1) Dacron (2) Teflon (3) Nylon-66 (4) Novolac

Sol. 2

Teflon is addition polymer which formed by addition polymerisation of Tetra fluoroethene

$$n\ F_2C = CF_2 \xrightarrow{\text{Polymerisation}} \left[F_2C–CF_2\right]_n$$

Teflon

68. The RBC deficiency is deficiency disease of:

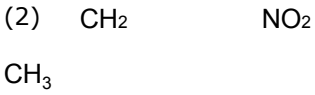
(1) Vitamin B_2 (2) Vitamin B_{12} (3) Vitamin B_6 (4) Vitamin B_1

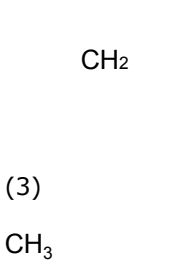
Sol. 2

Vitamin B_{12}

69. Identify the compound that will react with Hinsberg's reagent to give a solid which dissolves in alkali.

(1) 

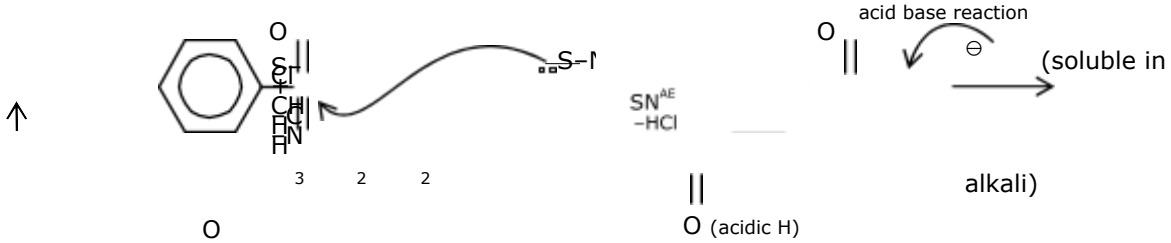
(2) 

(3) 

(4) 

Sol. 4

1º amine reacts with hinsberg reagent to give ppt. that is soluble in alkali. $CH_3–CH_2–NH_2$



70. Zr(Z=40) and Hf(Z=72) have similar atomic and ionic radii because of :

(1) having similar chemical properties

(2) belogning to same group

(3) diagonal relationship

(4) lanthanoid contraction

Sol. 4

From IV A to II B

Due to lanthanoid contration size of 4d & 5d series elements of same group are approx same.

71. Ethylene diaminetetraacetate (EDTA) ion is :

(1) Tridentate ligand with three "N" donor atoms

(2) Hexadentate ligand with four "O" and two "N" donor atoms

(3) Unidentate ligand

(4) Bidentate ligand with two "N" donor atoms

Sol. 2

72. An organic compound contains 78% (by wt.) carbon and remaining percentage of hydrogen. The right option for the empirical formula of this compound is: [Atomic wt. of C is 12, H is 1] (1) CH_4 (2) CH (3) CH_2 (4) CH_3

Sol. 4

C 78 $\frac{78}{12} = 6.5$ $\frac{6.5}{6.5} = 1$

H 22 $\frac{22}{1} = 22$ $\frac{22}{6.5} = 3.38 \approx 3$

Emperical formula = CH_3

74. The pK_b of dimethylamine and pK_a of acetic acid are 3.27 and 4.77 respectively at T(K). The correct option for the pH of dimethylammonium acetate solution is:

(1) 6.25 (2) 8.50 (3) 5.50 (4) 7.75

Sol. 4

WA + WB

$pH = 7 + \frac{1}{2} P^{Ka} - \frac{1}{2} P^{Kb}$

$pH = 7 + \frac{1}{2} \times 4.77 - \frac{1}{2} \times 3.27$

$pH = 7 \times \frac{1}{2} \times 1.5$

pH = 7.75

75. The structure of beryllium chloride in solid state and vapour phase, are :

(1) Chain in both (2) Chain and dimer, respectively

(3) Linear in both (4) Dimer and Linear, respectively

Sol. 2

$BeCl_{2(s)}$ polymeric

$BeCl_{2(v)}$ Dimer

76. Which one of the following methods can be used to obtain highly pure metal which is liquid at room temperature?

(1) Zone refining (2) Electrolysis

(3) Chromatography (4) Distillation

Sol. 1

Fact

77. Right option for the number of tetrahedral and octahedral voids in hexagonal primitive unit cell are :

(1) 12, 6 (2) 8, 4 (3) 6, 12 (4) 2, 1

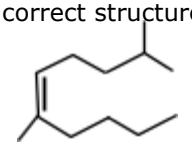
Sol. 1

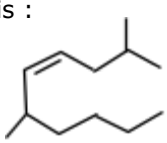
HCP Structure

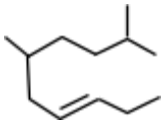
THV = 12

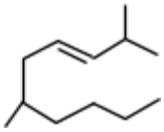
OHV = 6

78. The correct structure of 2, 6-Dimethyl-dec-4-ene is :

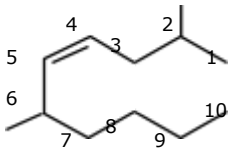
(1) 

(2) 

(3) 

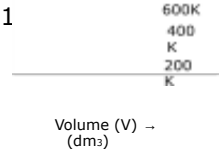
(4) 

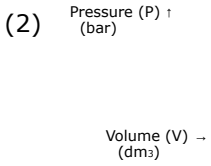
Sol. 2

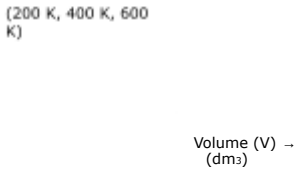


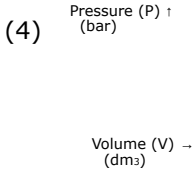
2, 6–Dimethyl dec-4-ene

79. Choose the correct option for graphical representation of Boyle's law, which shows a graph of pressure vs. volume of a gas at different temperature.

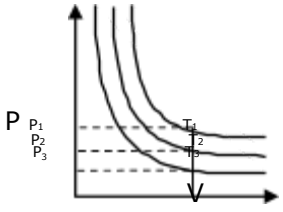
(1 

(2) 

(3 

(4) 

Sol. 1



PV = nRT

P ∝ T

$P_1 > P_2 > T_3 T_1$

$> T_2 > T_3$

80. The following solutions were prepared by dissolving 10g of glucose ($C_6H_{12}O_6$) in 250 ml of water (P_1), 10 g of urea (CH_4N_2O) in 250 ml of water (P_2) and 10 g of sucrose ($C_{12}H_{22}O_{11}$) in 250 ml of water (P_3). The right option for the decreasing order of osmotic pressure of these solution is: (1) $P_3 > P_1 > P_2$ (2) $P_2 > P_1 > P_3$ (3) $P_1 > P_2 > P_3$ (4) $P_2 > P_3 > P_1$

Sol. 2

$\Pi = CRT$

$\Pi \propto C \Rightarrow \Pi \propto \frac{1}{M_W}$

Glucose $\Rightarrow M_{w1} = 180$

Urea $\Rightarrow M_{w2} = 60$

Sucrose $\Rightarrow M_{w3} = 342$ $P_2 > P_1 > P_3$

81. The correct sequence of bond enthalpy of 'C–X' and is

(1) $CH_3 – Cl > CH_3 – F > CH_3 – Br > CH_3 – I$

(2) $CH_3 – F < CH_3 – Cl < CH_3 –Br < CH_3 – I$

(3) $CH_3 – F > CH_3 – Cl > CH_3 – Br > CH_3 – I$

(4) $CH_3 –F < CH_3 – Cl > CH_3 – Br > CH_3 – I$

Sol. 3

Bond enthalpy of C–X bond

$CH_3–F > CH_3–Cl > CH_3–Br > CH_3–I$

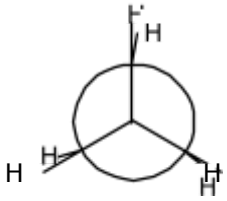
Down the group with the increase in size of halogen in C–X bond, energy decreases.

82. Dihedral angle of least stable conformer of ethane is :

(1) 0^o (2) 120^o (3) 180^o (4) 60^o

Sol. 1

Least stable conformer of ethane is eclipsed form



It's when dihedral angle is 0^o.

83. Noble gases are named because of their inertness towards reactivity. Identify an incorrect statement about them.

(1) Noble gases have large positive values of electron gain enthalpy.

(2) Noble gases are sparingly soluble in water.

(3) Noble gases have very high melting and boiling points.

(4) Noble gases have weak dispersion forces.

Sol. 3

Fact

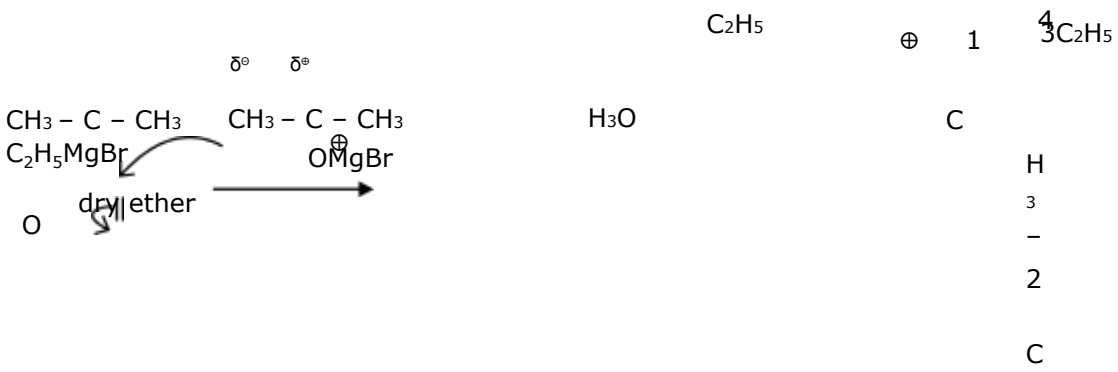
84. What is the IUPAC name of the organic compound formed in the following chemical reaction?

Acetone $\xrightarrow{\text{(i) } C_2H_5MgBr, \text{ dry ether}}$ Product

(1) 2-methyl butan-2-ol (2) 2-methyl propan-2-ol

(3) pentan-2-ol (4) pentan-3-ol

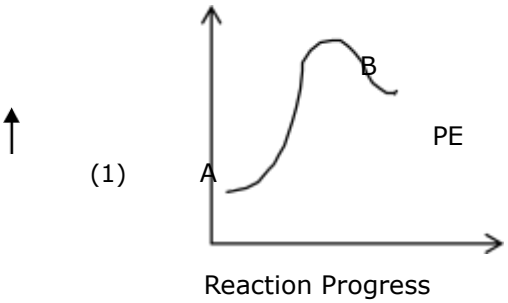
Sol. 1



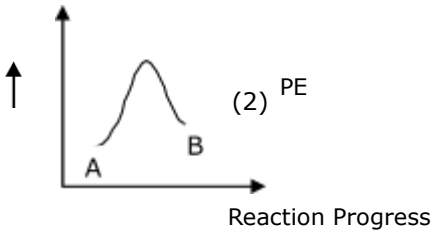
2-Methyl butan-2-ol

85. For a reaction A → B, enthalpy of reaction is -4.2 kJ mol^{-1} and enthalpy of activation is 9.6 kJ mol^{-1}. The correction potential energy profile for the reaction is shown in option.

(1)



(2)



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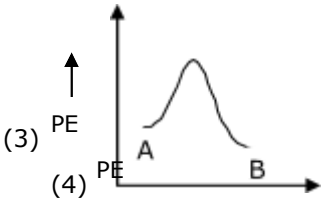

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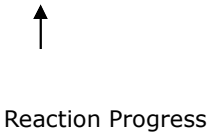


Sol. 3

$\Delta H = (E_a)_f - (E_a)_b$

$-4.2 = 9.6 - (E_a)_b$

$(E_a)_b = 13.8$

SECTION - B

86. Match List-I with List-II.

List-I	**List-II**
(a) $2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$	(i) Acid rain
(b) $HOCl(g) \xrightarrow{h\nu} \dot{O}H + \dot{C}l$	(ii) Smog
(c) $CaCO_3 + H_2SO_4 \rightarrow CaSO_4 + H_2O + CO_2$	(iii) Ozone depletion
(d) $NO_2(g) \xrightarrow{h\nu} NO(g) + O(g)$	(iv) Tropospheric pollution

Choose the correct answer from the options given below.

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

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

Sol. 4

Fact

87. $CH_3CH_2COO^-Na^+ \xrightarrow{Na} \xrightarrow{OH,} \xrightarrow{+} \xrightarrow{?} CH_3CH_3 + Na_2CO_3$.

Consider the above reaction and identify the missing reagent/chemical.

(1) DIBAL–H (2) B_2H_6

(3) Red Phosphorus (4) CaO

Sol. 4

$CH_3 - CH_2 - COONa \xrightarrow[\Delta]{Na} \xrightarrow{OH} \xrightarrow{+} \xrightarrow{?} CH_3 - CH$

It's decarboxylation in presence of sodalime so missing reagent is CaO.

(NaOH + CaO) sodalime

88. The correct option for the value of vapour pressure of a solution at 45ºC with benzene to octane in molar ratio 3 : 2 is :

[At 45ºC vapour pressure of benzene is 280 mm Hg and that of octane is 420 mm Hg. Assume Ideal

gas]

(1) 350 mm of Hg
(2) 160 mm of Hg
(3) 168 mm of Hg
(4) 336 mm of Hg

Sol. 4

$P_s = P^O_A x_A + P^O_B x_B$

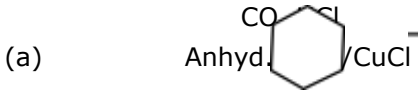
$= 280 \times \frac{3}{5} + 420 \times \frac{2}{5}$

$= 56 \times 3 + 84 \times 2$

$= 168 + 168$

$= 336$

89. Match List-I with List-II

List-I	**List-II**
(a) 	(i) Hell-Volhard-Zelinsky reaction
(b) $R-\overset{\overset{O}{\|\|}}{C}-CH_3 + NaOX \rightarrow$	(ii) Gattermann-Koch reaction
(c) $R-CH_2-OH + R'COOH \xrightarrow[\text{Conc. } H_2SO_4]{}$	(iii) Haloform reaction
(d) $R-CH_2COOH \xrightarrow{\text{(i) } X_2 / \text{Red } P}_{2}$	

(iv) Esterification

Choose the correct answer from the options given below : (1)

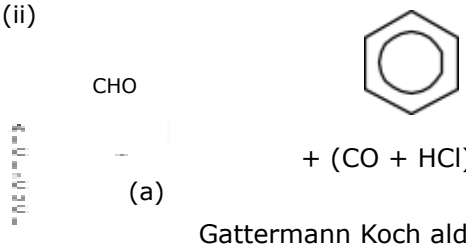
(a)–(ii), (b)-(iii), (c)-(iv), (d)-(i)

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

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

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

Sol. 1



(a) + (CO + HCl)

Gattermann Koch aldehyde synthesis

(b) $R-\overset{O}{\overset{\|}{C}}-CH_3 \xrightarrow{NaOX} CHX_3 + R-COONa$

Haloform reaction

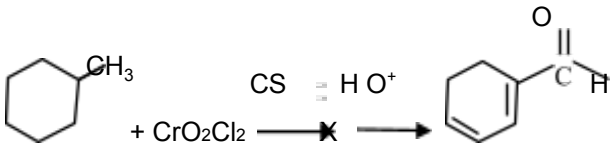
(c) $R-CH_2-OH + R'-COOH \xrightarrow{conc.\ H_2SO_4} R'-\overset{O}{\overset{\|}{C}}-O-CH_2-R$

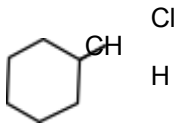
Esterification

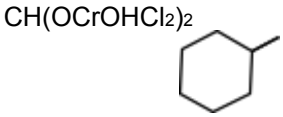
(d) $R-CH_2-COOH \xrightarrow[(ii)\ H_2O]{(i)\ X_2/Red\ P} R-\underset{Cl}{CH}-COOH$

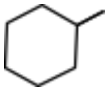
HVZ Reaction (Hell-volhard zelinsky Reaction)

90. The intermediate compound 'X' in the following chemical reaction is :

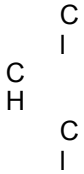


(1) 

(2) 

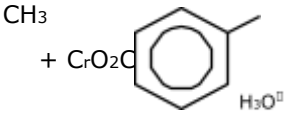


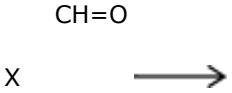
(3) CH(OCOCH3)2



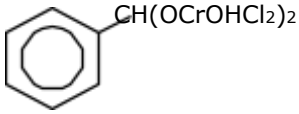
(4)

Sol. 2

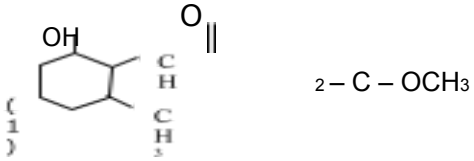




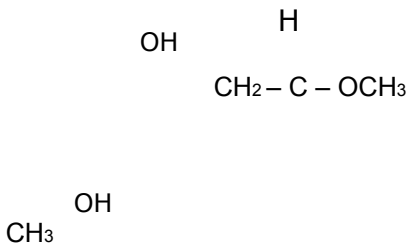
It's Etard Reaction "X" formed during the reaction



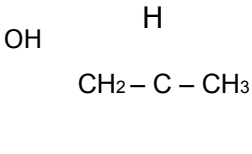
91. The product formed in the following chemical reaction is:



(1)

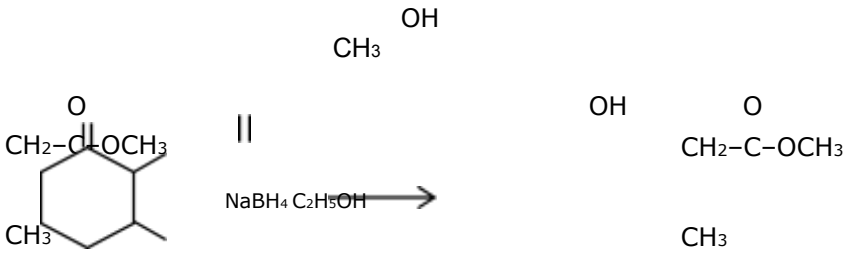
(2) 

(3)



(4)

Sol. 1



$NaBH_4$ does not reduce ester group

92. The slope of Arrhenius Plot $\left(\ln K \text{ / vs } \frac{1}{T}\right)$ of first order reaction is -5×10^3 K. The value of E_a of the reaction is. Choose the correct option for your answer.

[Given R = 8.314 $JK^{-1}mol^{-1}$]

(1) –83 kJ mol^{-1} (2) 41.5 kJ mol^{-1} (3) 83.0 kJ mol^{-1} (4) 166 kJ mol^{-1}

Sol. 2

$$\ln k = \ln A - \frac{E_a}{RT}$$

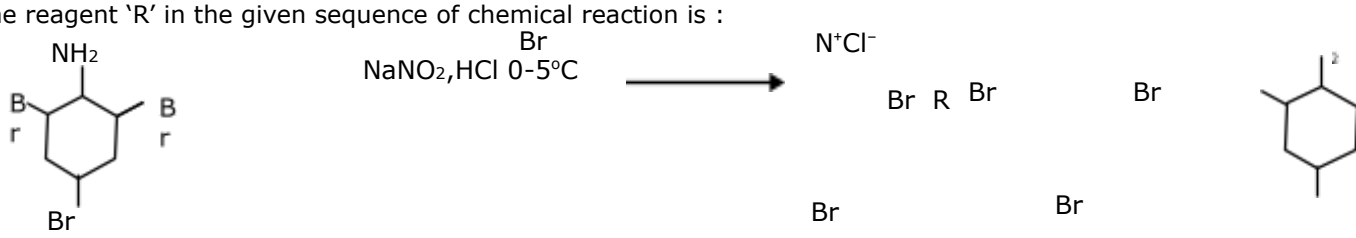
$$m = -\frac{E_a}{R}$$

$$\frac{-E_a}{R} = -5 \times 10^3$$

$E_a = 5 \times 10^3 \times 8.314$

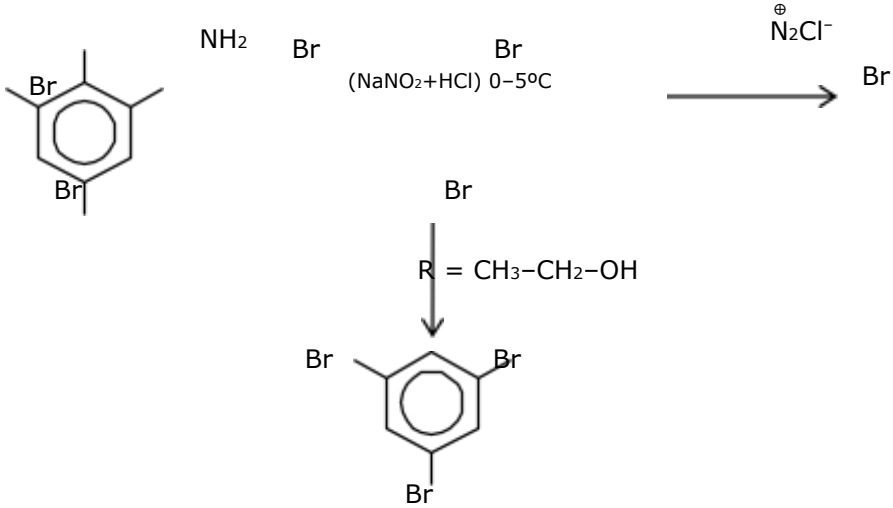
$E_a = 41.5$

93. The reagent 'R' in the given sequence of chemical reaction is :



(1) CuCN/KCN (2) H_2O (3) CH_3CH_2OH (4) HI

Sol. 3



94. For irreversible expansion of an ideal gas under isothermal condition, the correct option is :

(1) $\Delta U \neq 0, \Delta S_{total} = 0$ (2) $\Delta U = 0, \Delta S_{total} = 0$

(3) $\Delta U \neq 0, \Delta S_{total} \neq 0$ (4) $\Delta U = 0, \Delta S_{total} \neq 0$

Sol. 4

$\Delta S_{total} > 0$

$\Delta S_{total} \neq 0$

$\Delta U = 0$

95. From the following pairs of ions which one is not an iso-electronic pair ?

(1) Fe^{2+}, Mn^{2+} (2) O^{2-}, F^-

(3) Na^+, Mg^{2+} (4) Mn^{2+}, Fe^{3+}

Sol. 1

Not isoelectronic

Fe^{+2} Mn^{+2}

↓ ↓

$24e^-$ $23e^-$

96. The molar conductivity of 0.007 M acetic acid is 20 Scm^2mol^{-1}. What is the dissociation constant of acetic acid? Choose the correct option.

H^+

CH_3COO^-

$\lambda^\circ = 350\ S\ cm^2\ mol^{-1}$

$= 50\ S\ cm^2\ mol^{-1}$

(1) 2.50×10^{-5} mol L^{-1}

(2) 1.75×10^{-4} mol L^{-1}

(3) 2.50×10^{-4} mol L^{-1}

(4) 1.75×10^{-5} mol L^{-1}

Sol. 4

$\lambda^\infty_m CH_3COOH$

$= 50 + 350$

$= 400$

$\alpha = \frac{\Lambda_m}{\Lambda^\circ_m} = \frac{20}{400} = 0.05$

$= K_a = C\alpha^2$

$= 0.007 \times (0.05)^2$

$= 7 \times 10^{-3} \times 25 \times 10^{-4}$

$= 175 \times 10^{-7}$

$= 1.75 \times 10^{-5}$

97. Which of the following molecules is non-polar in nature?

(1) NO_2 (2) $POCl_3$ (3) CH_2O (4) $SbCl_5$

Sol. 4

Fact

98. Match List – I with List – II.

List – I	**List – II**
(a) $[Fe(CN)_6]^{3-}$	(i) 5.92 BM
(b) $[Fe(H_2O)_6]^{3+}$	(ii) 0 BM
(c) $[Fe(CN)_6]^{4-}$	(iii) 4.90 BM

(d) $[Fe(H_2O)_6]^{2+}$ (i) 1.73 BM

Choose the correct answer from the options given below. (1)

(a)-(iv), (b)-(i), (c)-(ii), (d)-(iii)

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

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

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

Sol. 1

3

(a) $[Fe(CN)_6]^{-3}$ Fe^{+3}

d

5

B

(b) $[Fe(H_2O)_6]^{+3}$ Fe^{+2}

a

c

(c) $[Fe(CN)_6]^{4-}$ Fe^{+2}

k

p

a

(d) $[Fe(H_2O)_6]^{+2}$ Fe^{+2}

i

r

i

n

g

✔

↿⇂ ↿⇂ ↿

∴ n = 1
∴ μ = 1.73 BM

3 d^5

↿	↿	↿	↿	↿

Back pairing ✗
∴ n = 5
∴ μ = 5.92 BM

3 d^6

↿⇂	↿⇂	↿⇂		

Back pairing ✔
∴ n = 0
∴ μ = 0 BM

3 d^6

↿⇂	↿	↿	↿	↿

Back pairing ✔
∴ n = 4
∴ μ = 4.90 BM

99. Choose the correct option for the total pressure (in atm.) in a mixture of 4g O_2 and 2g H_2 confined in a total volume of one litre at 0ºC is :

[Given R = 0.82 L atm mol^{-1} K^{-1}, T = 273 K]

(1) 26.02 (2) 2.518

(3) 2.602 (4) 25.18

Sol. 4

PV = nRT

$$P \times 1 = \left(\frac{4}{32} + \frac{2}{2}\right) \times 0.082 \times 273$$

P = 25.18 atm.

100. In which one of the following arrangements the given sequence is not strictly according to the properties indicated against it?

(1) $CO_2 < SiO_2 < SnO_2 < PbO_2$: Increasing oxidizing power

(2) HF < HCl < HBr < HI : Increasing acidic strength

(3) $H_2O < H_2S < H_2Se < H_2Te$: Increasing pK_a values

(4) $NH_3 < PH_3 < AsH_3 < SbH_3$: Increasing acidic character

Sol. 3

Oxidising power : $CO_2 < SiO_2 < SnO_2 < PbO_2$

Acidic strength : HF < HCl < HBr < HI

P_{Ka} : $H_2O > H_2S > H_2Se > H_2Te$

Acidic strength : $\propto \frac{1}{P_{Ka}}$

Acidic strength : $NH_3 < PH_3 < AsH_3 < S$