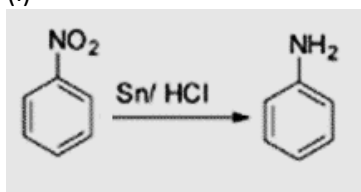


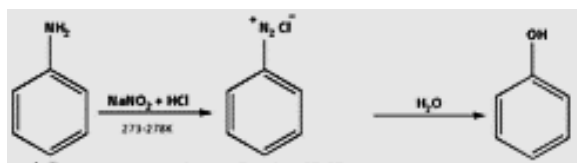
Q.No	Value points
	SECTION A
1	B
2	D
3	C
4	A
5	B
6	A
7	C
8	A
9	C
10	D
11	A
12	A
13	A/B
14	A
15	D
16	A

SECTION B

17 a) (i)



(ii)

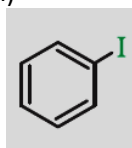


(Or any other suitable method)

OR

b)(i) On reaction with alc. KOH and chloroform, ethanamine gives foul smelling isocyanide whereas dimethylamine does not. (Or any other suitable test)

(ii)



/ iodobenzene

18 a) When concentration of an electrolytic solution approaches zero, the molar conductivity is known as limiting molar conductivity.
b) Cell that converts the energy of combustion of fuels directly into electrical energy .

19 Monosaccharide:- glucose , fructose
Disaccharide:- sucrose and lactose

20 Cell constant = $G^* = \text{conductivity} \times \text{resistance} = 0.0248 \text{ S/cm} \times 200 \text{ ohm} = 4.96 \text{ cm}^{-1}$
Conductivity of $0.05 \text{ mol L}^{-1} \text{ KCl}$ solution = cell constant / resistance
= $G/R = 4.96/620 = 0.008 \text{ S cm}^{-1}$
Molar conductivity = $\Lambda_m = \frac{k \times 1000}{c}$

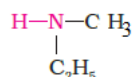
$$k = 2.303/40 \text{ min} \times 0.60$$

$$k = 0.0345 \text{ min}^{-1}$$

SECTION C

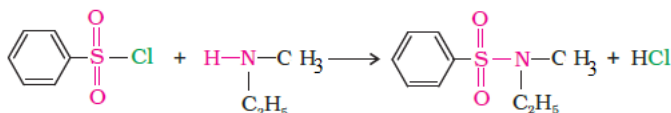
22

X=



IUPAC name of the product-

N-Ethyl-N-methylbenzene sulphonamide



23

a) AgCN is mainly covalent in nature and only nitrogen is free to donate electron pair forming isocyanide as the main product.

b) Allyl carbocation formed is resonance stabilized. /



c) Due to Resonance, a partial double bond is formed between C-X / sp^2 hybridization of carbon atom in C—X bond / Instability of phenyl cation.

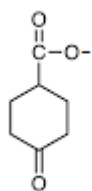
24

- Tetraamminechloridonitrito-N-cobalt (III) chloride
- Hexaamminenickel(II) chloride
- Potassium trioxalatochromate (III)
- Dibromidobis(ethane-1,2-diamine)cobalt (III) ion

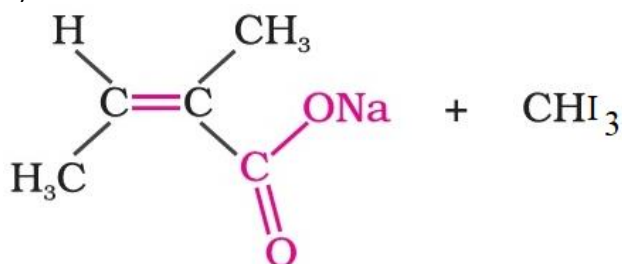
(Any three)

25

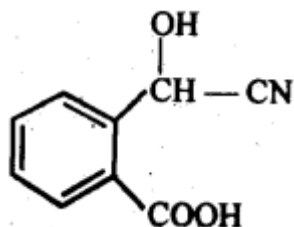
a)



b)



c)



26

$$E^\circ_{\text{cell}} = 1.05 \text{ V}$$

(Deduct ½ mark for incorrect unit or no unit.)

SECTION D

29	a) 6 b) solvate/hydrate isomerism c) i) $t_{2g}^3 e_g^1$ ii) $t_{2g}^4 e_g^0$ OR c) Oxidation state= +3 Coordination number =6	
30	a) Pyridoxine b) Vitamin K c) Vitamin A Sources-Fish liver oil, carrots. OR c) Water soluble and are readily excreted in urine Scurvy	(Any other suitable sources)

SECTION E

31

a) (i) $\Delta T_f = 2.8^\circ\text{C}$

$$\Delta T_f = K_f \times w_B / M_B \times W_A \text{ (kg)}$$

$$2.8 = 1.86 \times w_B / 62 \times 1$$

$$w_B = 2.8 \times 62 / 1.86$$

$$w_B = 93.33 \text{ g} \quad (\text{Deduct } \frac{1}{2} \text{ mark for incorrect unit or no unit})$$

(ii) Positive deviation

Interaction between ethanol-ethanol is stronger than ethanol-acetone.

OR

31

b) (i) $\Delta T_b = 100 - 99.68^\circ\text{C} = 0.32^\circ\text{C}$

$$\Delta T_b = K_b \times w_B / M_B \times W_A \text{ (kg)}$$

$$0.32 = 0.52 \times w_B \times 1000 / 342 \times 500$$

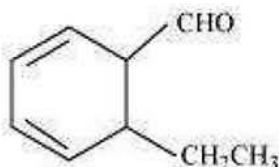
$$w_B = 0.32 \times 342 / 0.52 \times 2 = 105.23 \text{ g} \quad (\text{Deduct } \frac{1}{2} \text{ mark for incorrect unit or no unit.})$$

(ii) At a constant temperature, the solubility of a gas in a liquid is directly proportional to the partial pressure of the gas present above the surface of liquid or solution. / The partial pressure of the gas in vapour phase (p) is proportional to the mole fraction of the gas (x) in the solution"

Application: To increase the solubility of CO_2 in soft drinks and soda water, the bottle is sealed under high pressure. (or any other)

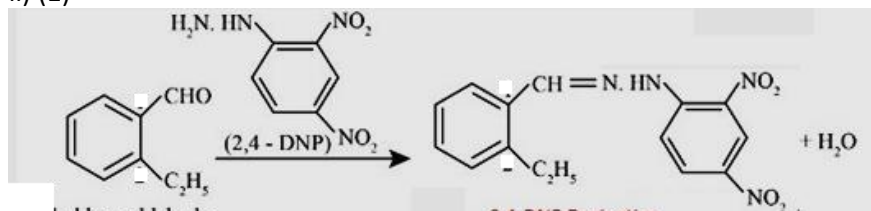
32

a) (i)



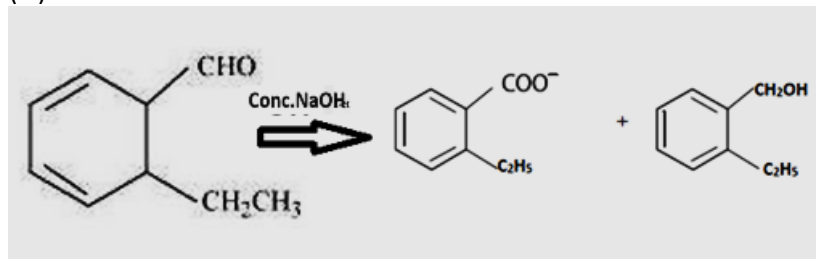
2 - Ethylbenzaldehyde (A)

ii) (1)



(2) Aromatic aldehydes do not give fehling's test , 1 mark to be given if attempted in any way.

(iii)



OR

32 b) (i) (1) Electron withdrawing nature of carbonyl group/ Due to resonance stabilization of the conjugate base.
 (2) Due to cleavage of C-H bond in aldehydes is easier than C-C bond in ketones.

(ii) (1) propanal > benzaldehyde > Acetone
 (2) Propane < dimethyl ether < propanal < ethanol
 (iii) Benzoic acid will give brisk effervescence on reacting with sodium bicarbonate whereas benzaldehyde does not. (or any other suitable test)

33 a) Ce(IV) ion has more stable configuration ($4f^0$) than Ce(III) ion.
 b) Due to extra stability of half filled (d^5) orbitals in Mn^{2+}
 c) Zinc, due to completely filled d-orbitals/ weak metallic bonding.
 d) It gets converted to sodium dichromate / colour changes from yellow to orange / correct equation.
 e) Due to completely filled d-orbitals / weak metallic bonding
 f) HCl is oxidized by $KMnO_4$ to Cl_2 .
 g) Lower oxide of transition metals are ionic & ionic character decreases or covalent character increase with increase in oxidation state.

(Any five)