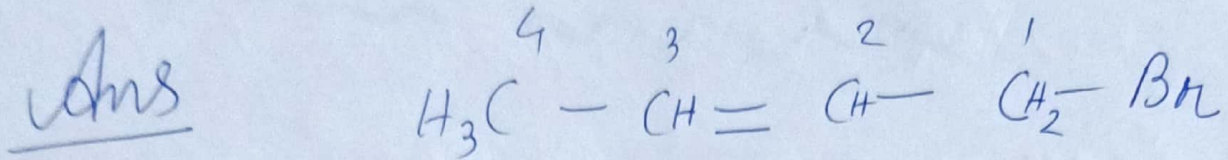


Q5 Write structural formula of 1-Bromobut-2-ene

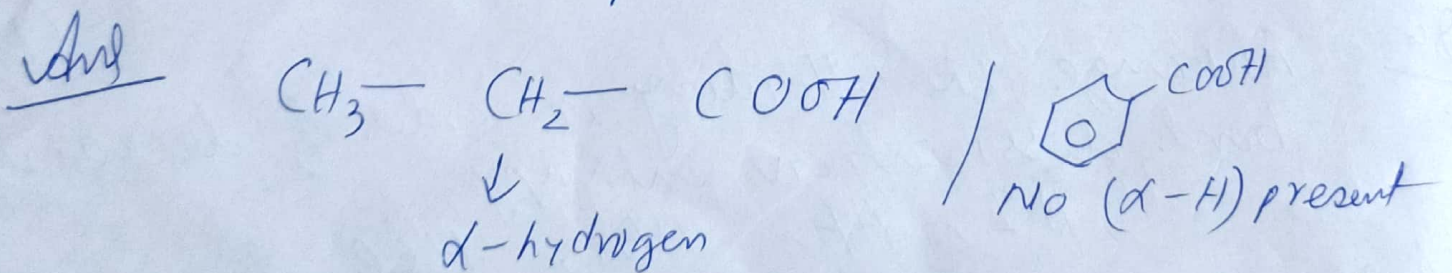


Q6 Ethanol has higher B.P. than methoxymethane, why?

Ans Ethanol ($\text{C}_2\text{H}_5\text{-OH}$) can easily form H-bonding and is more soluble in water than $\text{CH}_3\text{-O-CH}_3$

Q7 which will undergo (H V Z)
Hell-Volhard-Zelinsky rx^n

- ① Benzoic acid
- ② Propanoic acid



Propanoic acid has (α -hydrogen) present so, undergoes H V Z rx^n .

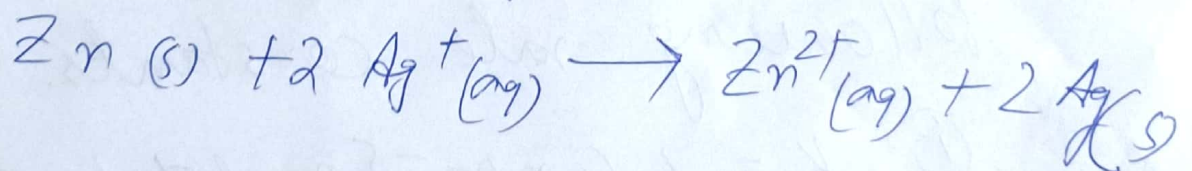
Q8 what is the difference between Nucleoside and Nucleotide?

Ans Nucleoside is a combination of Pentose sugar and nitrogenous base.

Nucleotide is a combination of Nucleoside and phosphate group.

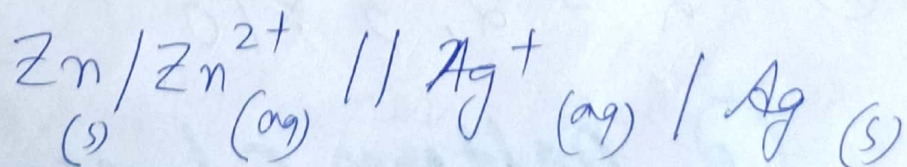
Q12

Q depict the galvanic cell in which following rxⁿ takes place

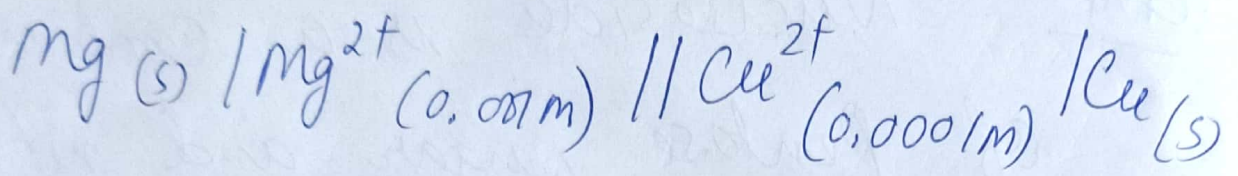


Ans

oxidation // Reduction



Q12 (b) Write the Nernst equation of the following cell



Ans

$$E_{\text{cell}} = E^{\circ}_{\text{cell}} - \frac{0.0591}{n} \log \frac{\text{anode}}{\text{cathode}}$$
$$= E^{\circ}_{\text{cell}} - \frac{0.0591}{2} \log \frac{[\text{Mg}^{2+}]}{[\text{Cu}^{2+}]}$$

$$E_{\text{cell}} = E^{\circ}_{\text{cell}} - \frac{0.0591}{2} \log \frac{10^{-3}}{10^{-4}}$$

Q19 Identify the reaction order from following rate constants.

(i) $k = 1.4 \times 10^{-5} \text{ mol}^{-1} \text{ L s}^{-1}$

(ii) $k = 2.3 \times 10^{-4} \text{ s}^{-1}$

@ pattern classes

comp (i) we know that, unit of rate constant

$$k = (\text{Concentration})^{1-n} t^{-1}$$

$$\therefore \left(\frac{\text{mol}}{\text{L}}\right)^{1-n} t^{-1} = \text{mol}^{-1} \text{L} \text{S}^{-1}$$

$$\Rightarrow \left(\frac{\text{mol}}{\text{L}}\right)^{1-n} t^{-1} = \left(\frac{\text{mol}}{\text{L}}\right)^{-1} \text{S}^{-1}$$

$$\therefore 1-n = -1$$

$$\Rightarrow n = 2$$

Pattern
Classes

\therefore second order reaction

$$(ii) \left(\frac{\text{mol}}{\text{L}}\right)^{1-n} t^{-1} = \text{S}^{-1}$$

$$\Rightarrow \left(\frac{\text{mol}}{\text{L}}\right)^{1-n} t^{-1} = \left(\frac{\text{mol}}{\text{L}}\right)^0 \text{S}^{-1}$$

$$\therefore 1-n = 0$$

$$\Rightarrow n = 1$$

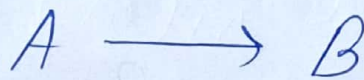
\therefore first order reaction

Q19

(b) Conversion of molecule A to B follows 2nd order kinetics. If (A) is increased four times how will the rate of formation of B be effected?

Ans

A/C,



$$R_1 = \text{Rate} = K[A]^2$$

$$\text{Now, } R_2 = K[4A]^2$$

$$R_2 = 16 K[A]^2$$

$$\boxed{R_2 = 16 \times R_1}$$

Q19

(c) what is collision frequency?

Ans The number of collisions per second per unit volume of the reaction mixture is known as C.F.

Q 21

(a) (i) Actinoid contraction is greater from element to element than lanthanide contraction, why?

Ans: The shielding effect of 5f orbitals is poorer than the shielding effect of 4f orbitals. Due to this, the valence shell electrons of actinide experience greater effective nuclear charge than the experienced by lanthanides. Hence, A.C. is greater than L.C.

21

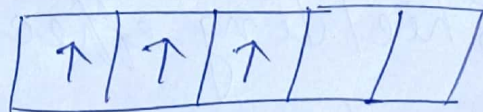
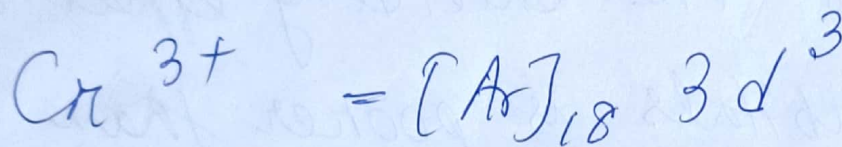
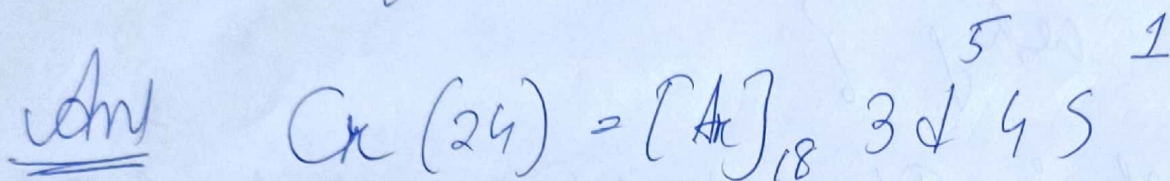
(ii) what are interstitial compounds?

Ans TiC, Fe₃H, TiH_{1.7} etc.

Not in syllabus.

Q 21

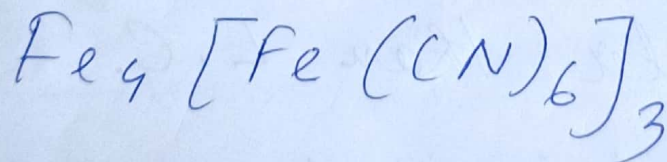
(iii) Calculate number of unpaired electrons in the gaseous ion of Cr^{3+}



3 unpaired electron is present

Q 22

@ Write IUPAC name of



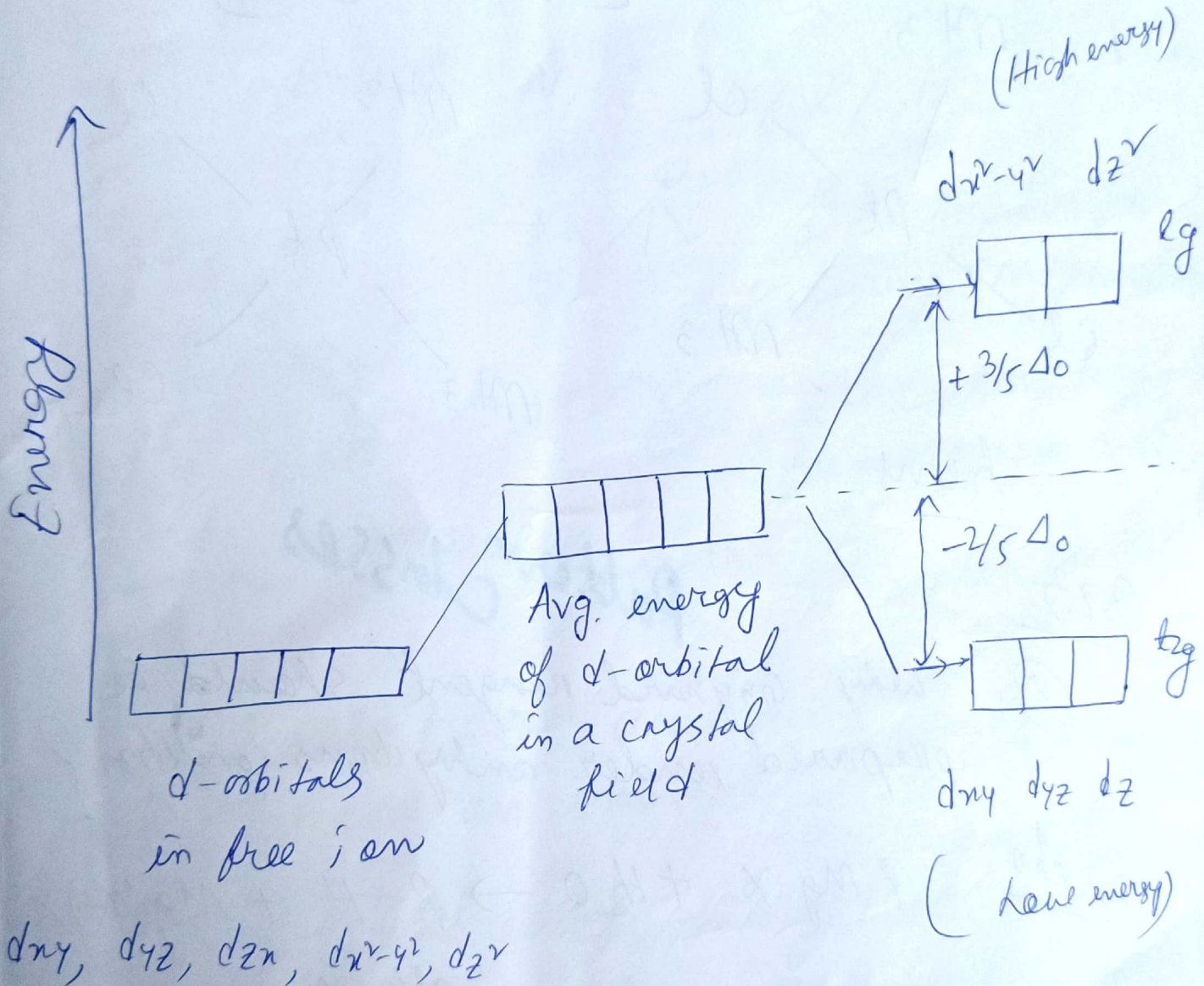
Iron (III) hexacyanidoferrate (II)

www.patternclasses.in

Q 22

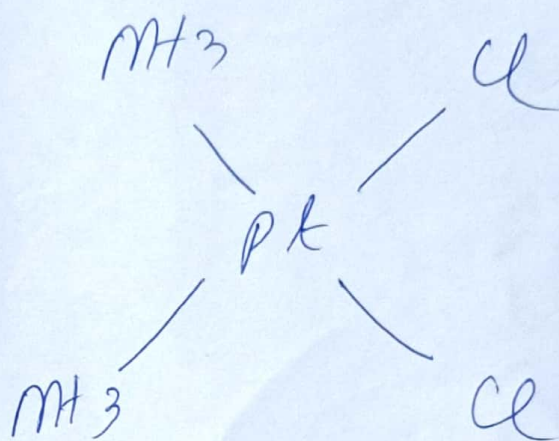
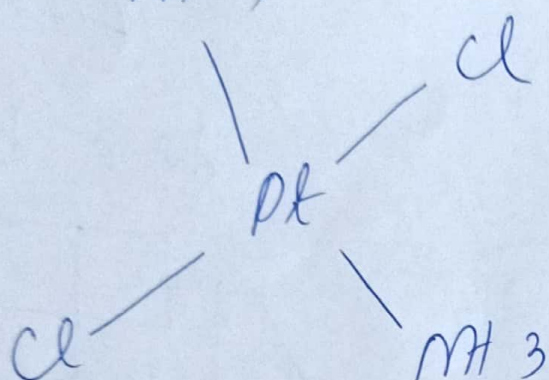
(b)

Draw figure to show the splitting of d-orbitals in an octahedral crystal field



Q 22

(c) Write the structures of the geometrical isomer of the compound $[Pt(NH_3)_2Cl_2]$

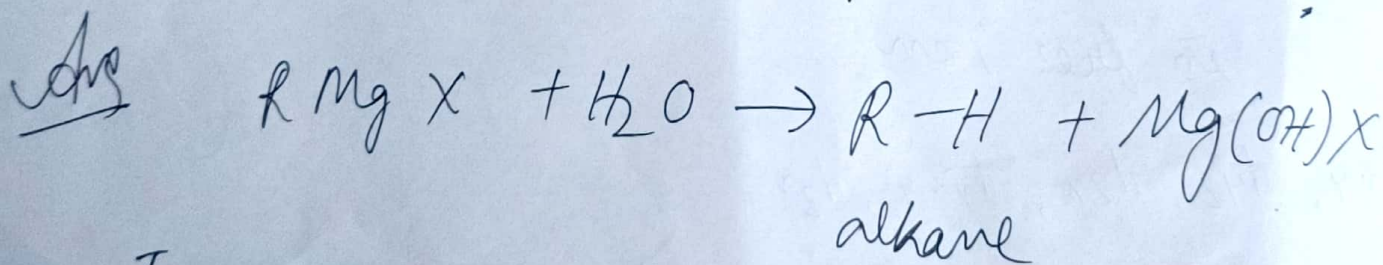


trans

Pattern classes

Q 23

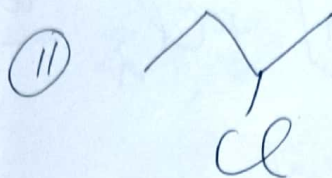
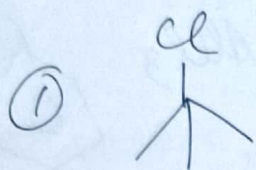
(a) Why Grignard reagent should be prepared under anhydrous condition?



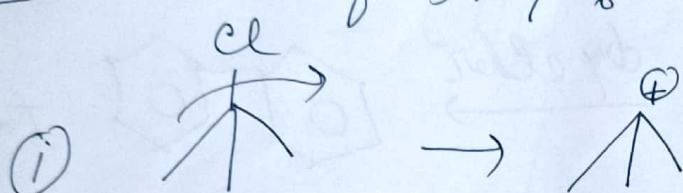
In presence of H_2O , Grignard reagent forms alkane ($R-H$) easily. To avoid this situation, it should be prepared under anhydrous condition.

Q23

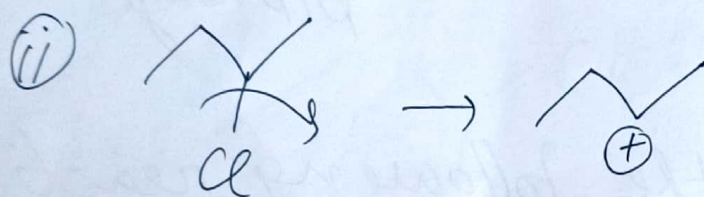
(b) Which will follow S_N1 faster and why?



Ans: Rate of S_N1 : $3^\circ > 2^\circ > 1^\circ$



3° carbocation forms during S_N1 reaction



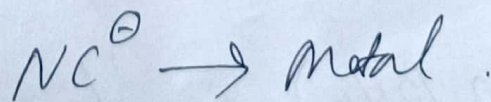
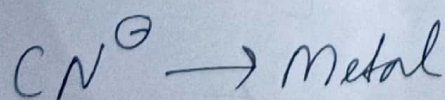
2° carbocation forms during S_N1 .

So, (i) will undergo S_N1 rxn faster

Q23

(c) What are ambident nucleophiles? Give an example.

Ans The nucleophile which contains two donor sites called ambident nucleophile. eg, CN^\ominus , NC^\ominus ,

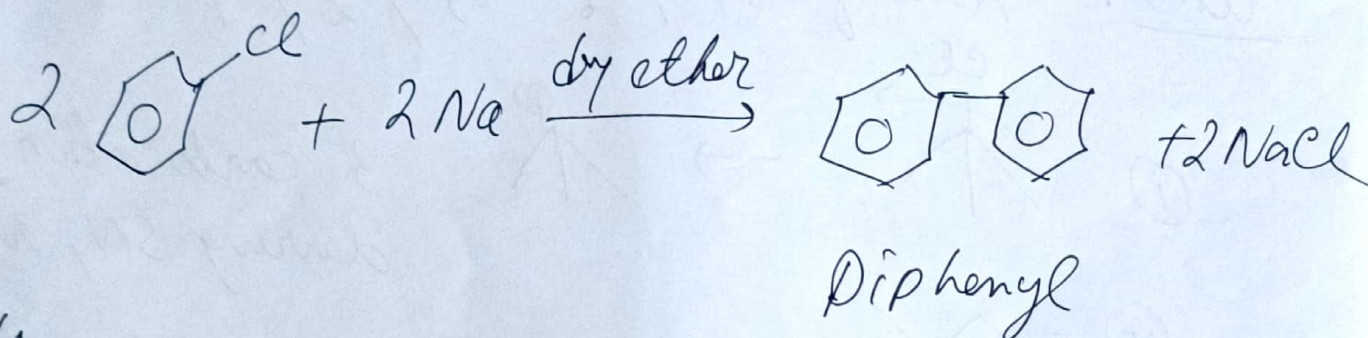
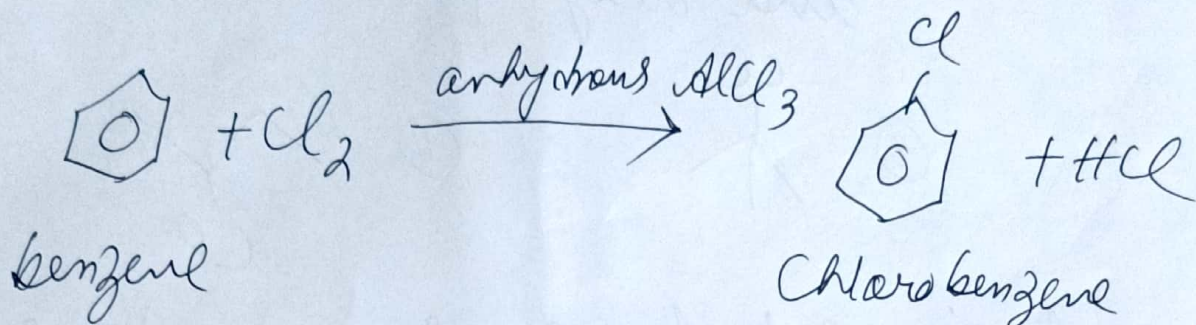


Q23

(a)

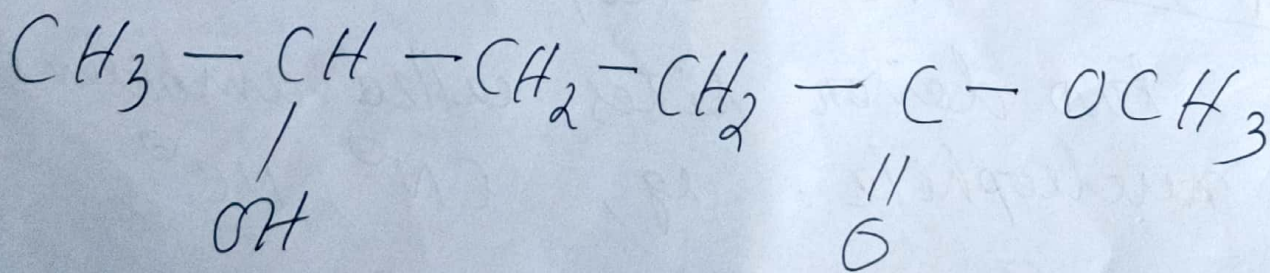
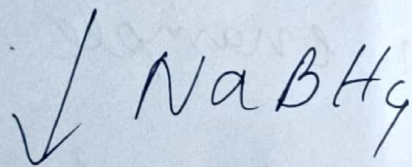
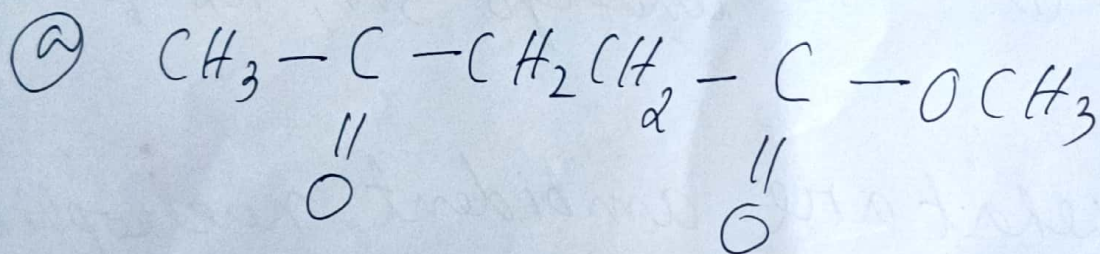
Convert benzene to diphenyl

Ans



Q24

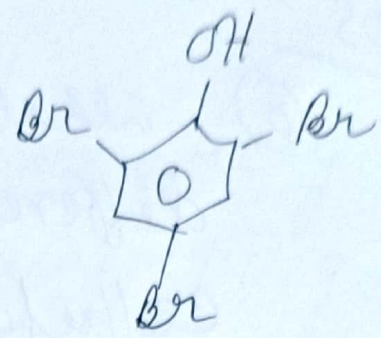
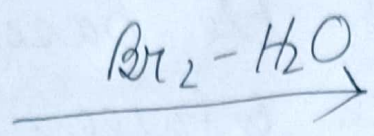
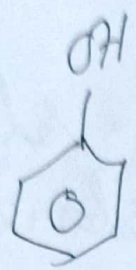
Complete the following reactions



(NaBH₄) can't reduce ester.

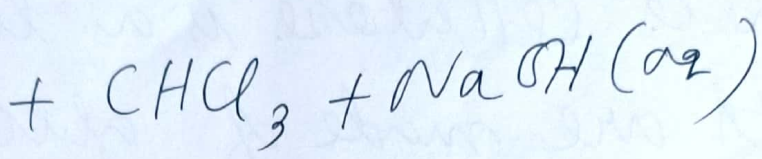
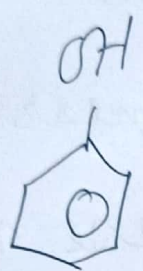
Q24

(b)

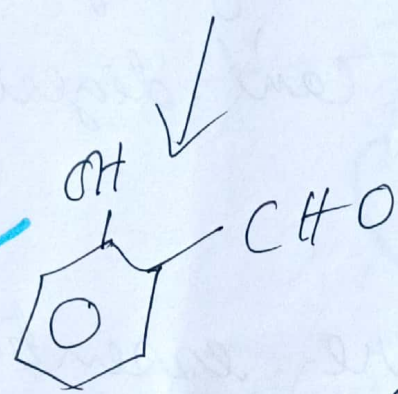


2,4,6-tribromophenol

(c)



Problem Classes



[Reimer-Tiemann rxn]

salicylaldehyde

Q25

(a) what are reducing sugars?

Ans Carbohydrides which can reduce fehling solution as well as Tollens reagent are known as reducing sugar. eg. Glucose, galactose, fructose.

Q25

⑥ what is the basic structural difference between starch and cellulose?

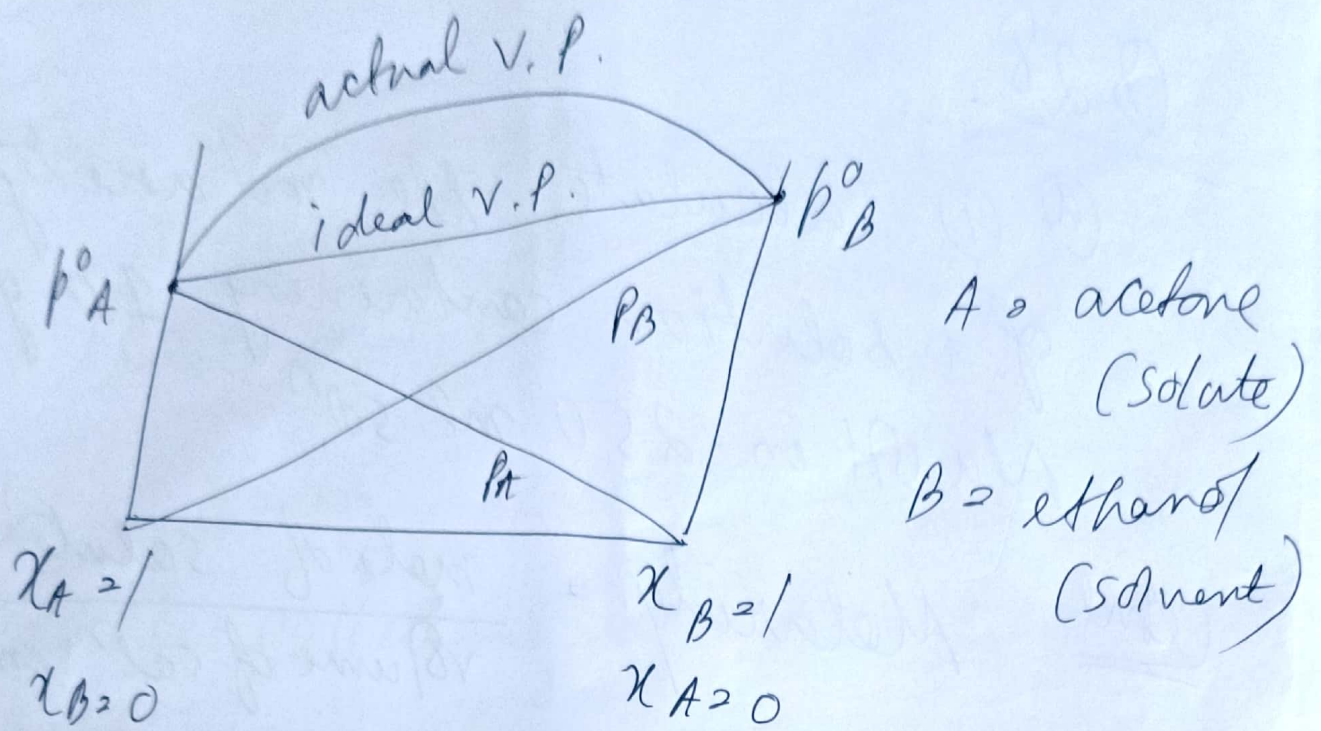
Ans starch is a branched polymer while cellulose is a linear polymer. Both are made of glucose molecules but human can't digest cellulose.

Q25

P.C.

⑦ what are essential and non essential amino acids?

Ans: There are nine essential amino acids whereas eleven non-essential amino acids are present. Essential amino acids are not made by human body and should be acquired from our diet. Non-essential amino acids are synthesized by the human body.



As the H-bonding between solvent molecules (EtOH) breaks due to the addition of acetone, the molecules are free to escape to the vapour phase resulting higher vapour pressure.

* Exam sekha kuwa dina
Tumaluk uri phuriba.
Koba je aami positive deviation.

Q28

(iii)

state Henry's law

Ans Henry's law states that the amount of gas that is dissolved in a liquid is directly proportional to the partial vapour pressure of that gas above the liquid when the temperature is constant.

Mathematically, $P_A = K_H \cdot X_A$

where P_A = partial v.p. of substance A
 X_A = mole fraction of A which also represents solubility.

Q28

Pattern classes, Nagan

(6) (i)

Volume = $200 \text{ cm}^3 = 0.2 \text{ L}$

mass of protein = 1.26 g

osmotic pressure (π) = 2.57×10^{-3}

Find molar mass of protein

$$\pi = CRT$$

$$\pi = \frac{\text{mol}}{\text{Volume}} \times RT$$

$$\pi = \frac{\text{mass / molar mass}}{\text{Volume}} \times RT$$

$$\Rightarrow \text{Molar mass} = \frac{1.26 \times 0.083}{2.57 \times 10^{-3} \times 0.2} = 61.022 \text{ gmol}^{-1}$$

Q 28

(b) (ii) State Raoult's Law

Ans It states that the partial vapor pressure of each component of an ideal mixture of liquids is equal to the vapor pressure of the pure component multiplied by its mole fraction in the mixture. Mathematically,

$$p_A = p^0 \cdot \chi_A$$

p_A = partial vapor pressure

p^0 = pure state vapour pressure

χ_A = mole fraction of A

(iii) Name a method for desalination of sea water.

Ans Reverse osmosis

pattern classes

98640-89106

(iv)

What are azeotropes?

Ans

Azeotropes are mixture of two or more liquid solution which boil and distill at constant temperature. There are two types of azeotropes.

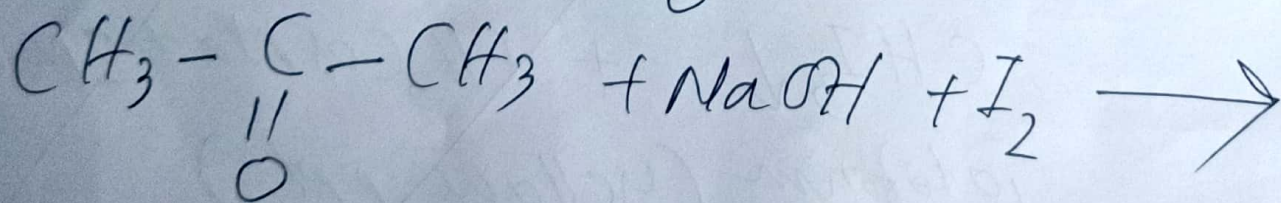
- (i) minimum boiling azeotrope
- (ii) Maximum boiling azeotrope.

Q30

Distinguish between propanal and propanone

Ans $\text{CH}_3 - \text{CH}_2 - \underset{\text{O}}{\underset{||}{\text{C}}} - \text{H}$ don't undergo

iodoform test because there is no $\text{CH}_3 - \underset{\text{O}}{\underset{||}{\text{C}}} -$ group present.



CHI_3 + CH_3COONa + 2NaOH
iodoform (yellow ppt)