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7. What is meant by positive & negative deviations from Raoult's law & how is the sign of ΔP_{sol} related to positive & negative deviation from Raoult's law?
8. Calculate the mass of a non-volatile solute (molecular mass 40 g mol^{-1}) which should be dissolved in 114 g of octane to reduce its vapour pressure to 80% .
9. Give the difference between ideal solution & non-ideal solution.
10. Define vapour pressure. "Vapour pressure of the solution is less than the vapour pressure of the pure solvent." Comment on the statement.

Mixture of CHCl_3 & C_6H_6 (Azeotropic)
Shows a negative deviation from Raoult's law & forms a minimum boiling azeotrope.

Shows a positive deviation from Raoult's law & forms a maximum boiling azeotrope.

Shows a negative deviation from Raoult's law & forms a minimum boiling azeotrope.

Surface Chemistry

[1 Mark Ques]

Q 1:- Explain the following

- Electrophoresis
- Dialysis
- Tyndall effect
- Co-agulation
- Hydrosol.
- Aerosol.
- Aleosol

Q 2. What is demulsification?

Q 3. Name two demulsifiers

Q 4. Explain Zeolites.

5. Lyophobic colloid

6. Lyophilic colloid

Q 7:- "Colloids is not a substance but a state of substance". Comment

Q 8:-
Heterogeneous Catalyst
Homogeneous Catalyst

Q 9:- Why is adsorption always exothermic?

Q 10:- What are multimolecular & macromolecular colloid.

Q 11:- Adsorption Isotherm

Q 12:- Explain adsorption isotherm for physical & chemical adsorption.

Q 13:- Explain adsorption isobar

Q 14:- Explain (a) Langmuir adsorption isotherm
(b) Freundlich adsorption isotherm.

Q1: Discuss the effect of pressure on the adsorption of gases on solid.

Q16: Discuss the effect of temperature on the adsorption of gases on solid.

Q17: Define (i) adsorbate
(ii) adsorbent
(iii) Sorption.

Q18: Action of soap is due to emulsification + micelle formation.

Q19: Give uses of emulsion.

Q20: Explain what is observed.

- (i) when a beam of light is ad passed through a colloidal sol.
- (ii) electric current is passed through a colloidal sol.
- (iii) an electrolyte, NaCl is added to hydrated ferric oxide sol.

Q21: What is shape-selective catalysis.

[1 mark Ques]

Q Explain the following reactions

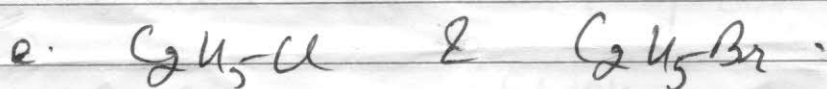
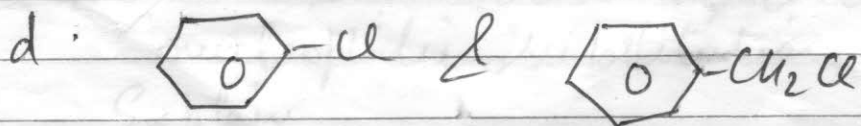
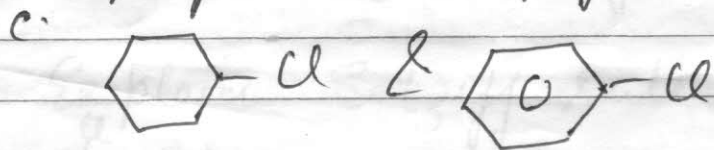
- Sandmeyer reaction
- Catterham reaction
- Balz-Schiemann reaction
- Swart's process
- Groove's reaction
- Funkelstein reaction
- Hunsdiecker reaction

Q Conversion

- Chloroform to picric acid
- Chloroform to phenol
- Chloroform to toluene
- Ethyl bromide to diethyl ether

Q Distinguish

- Methanol & ethanol
- propan-1-ol & propan-2-ol



Q Explain the following

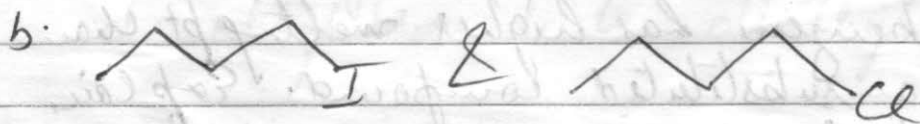
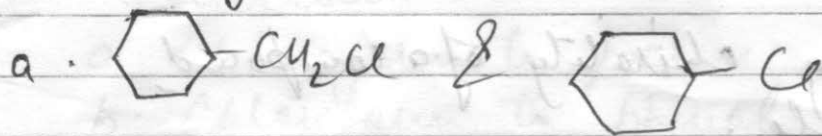
- Chlorination of benzene in the presence of U.V. light
- propene is treated with HBr in the presence of benzoyl peroxide

Q1: R-X with KCN(aq) form cyanide & with AgCN form isocyanide Explain

Q2: Explain SN¹ mechanism with example

Q3: Explain SN² mechanism with example

4: In the following pairs of halogen compounds which would undergo SN² reaction faster & why.



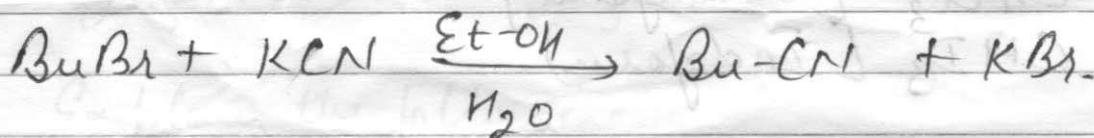
Q4: R-X with KOH(aq) form alcohol & with KOH(alc.) form alkene Explain

5: Explain Saytzeff rule with example.

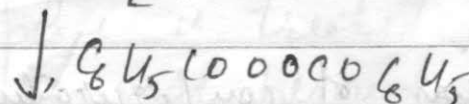
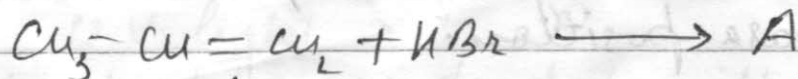
6: C1CCCCC1Cl is less reactive than R-Cl towards nucleophilic substitution reaction.

Explain

7: Write the mechanism of the following reaction



8: Complete the following reaction



B

9 Define the following with example

- Enantiomers
- Racemic mixture

10 Explain the following

- Grignard reagents should be prepared under anhydrous conditions
- Alkyl halides, though polar, are immiscible with water.

11 What is meant by chirality of a compound? Give an example.

Q12 a) p-dichlorobenzene has higher melting pt. than ortho & meta substituted compound. Explain.
b) C-Cl bond length in chlorobenzene is shorter than CH_3Cl .

Q13 Haloarenes can undergo electrophilic substitution reaction & nucleophilic substitution reaction depending upon the condition. Explain.

Q14 Give the uses & harmful effects of

- D.D.T
- Freon gas
- CHCl_3 [Chloroform]
- CHI_3 [Iodoform]

Q15 Why are haloarenes more stable than haloalkanes & undergo electrophilic substitution at ortho & para position.

Q16 Explain inversion of configuration & retention of configuration.