

This question paper contains 5 printed pages]

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--

S. No. of Question Paper : 5795

Unique Paper Code : 2172011202

Name of the Paper : DSC : Haloalkanes, Arenes, Haloarenes,
Alcohols, Phenols, Ethers and Epoxides

Name of the Course : B.Sc. (Hons.) Chemistry

Semester : II

Duration : 2 Hours

Maximum Marks : 60

(Write your Roll No. on the top immediately on receipt of this question paper.)

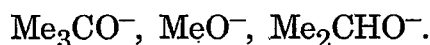
Attempt four questions in all.

Question No. 1 is compulsory.

Each question carries 15 marks.

1. Answer the following (any five) :

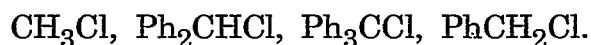
- (a) Arrange the following alkoxide nucleophiles in decreasing order of S_N2 reactivity giving reasons :



- (b) Why is nitrobenzene a suitable solvent for the Friedel-Crafts alkylation of PhBr while benzene is not ?
- (c) Which is a stronger base, RO^- or RS^- ? Which will be a better nucleophile in aqueous solution and DMSO ?

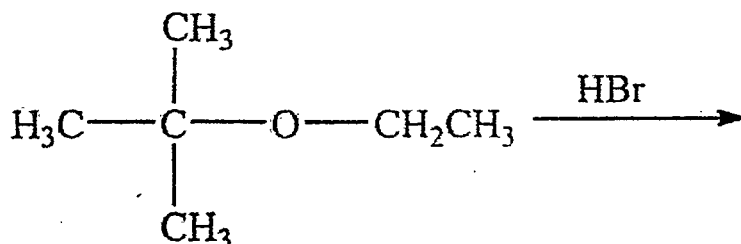
P.T.O.

- (d) How many mononitration products would be formed from each isomeric dibromobenzene ?
- (e) Comment on acidic properties of isomeric nitrophenols.
- (f) Why do aryl halides and vinyl halides show low reactivity towards nucleophilic substitution reactions compared to alkyl halides ?
- (g) How many molecules of HIO_4 would be consumed for oxidation of propane-1, 2, 3-triol and what are the products formed ?
- (h) Giving reasons, arrange the following in increasing order of reactivity towards alkaline hydrolysis by $\text{S}_{\text{N}}1$ reaction :



3×5=15

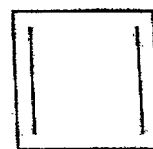
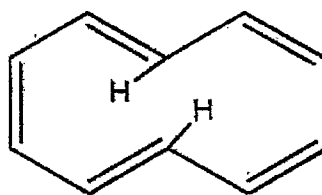
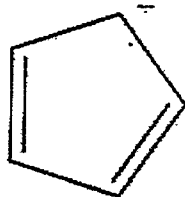
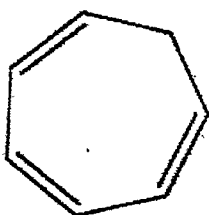
2. (a) Write the product of the following reaction with mechanism :



- (b) Why 2, 4, 6-trinitrochlorobenzene is easily hydrolysed in the presence of aq. NaOH solution but not chlorobenzene ?
- (c) The reaction of $(\text{CH}_3)_3\text{C-Cl}$ with CH_3O^- does not give of $(\text{CH}_3)_3\text{C-OCH}_3$.

5,5,5

3. (a) What happens when tertiary butyl bromide is treated with water ?
Give its mechanism with stereochemical aspect.
- (b) How would you distinguish between the following by a chemical reaction :
- (i) 1-butanol and diethyl ether
- (ii) tert-butyl alcohol and methanol.
- (c) Classify the following compounds as aromatic, antiaromatic and non-aromatic ?



5,5,5

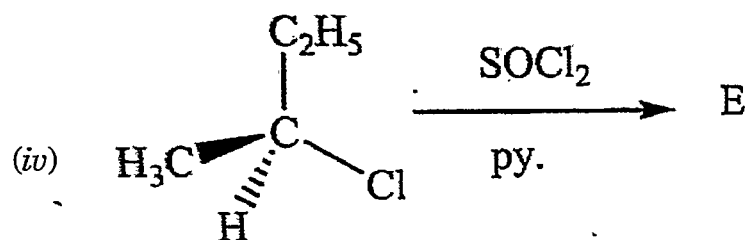
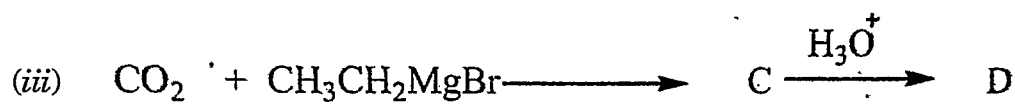
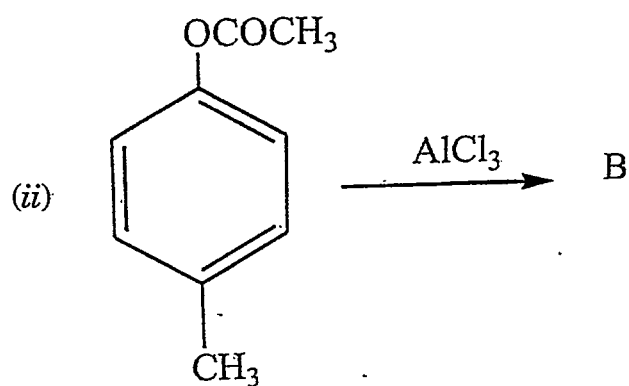
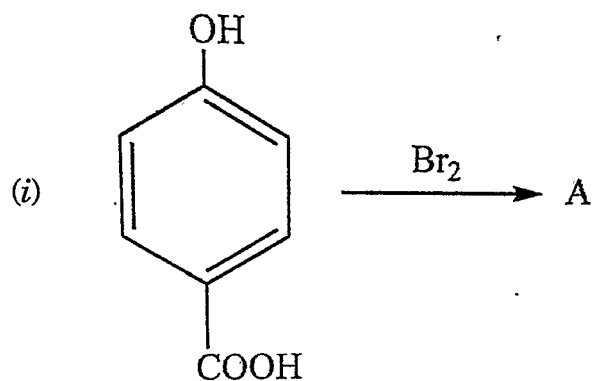
4. (a) Outline the following conversions (any *three*) :
- (i) Benzyl alcohol from methanal
- (ii) Salicylic acid from phenol
- (iii) Acetone from methyl bromide
- (iv) Benzene to *m*-bromobenzoic acid.
- (b) Both o-bromoanisole and m-bromoanisole give the same product on reaction with NaNH_2 in the presence of liquid ammonia.

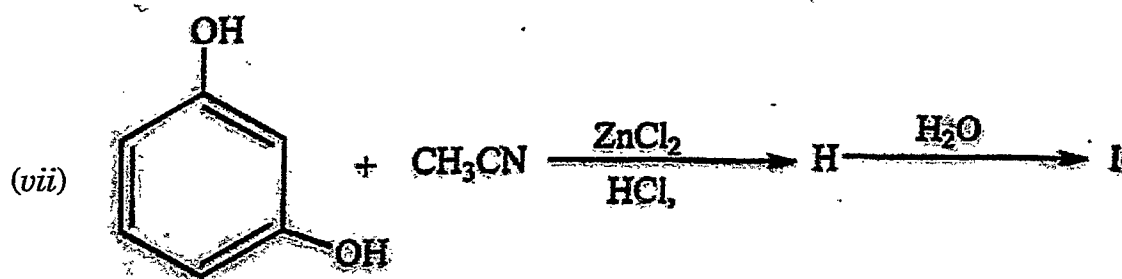
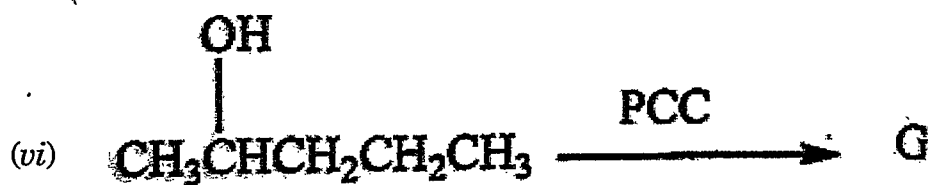
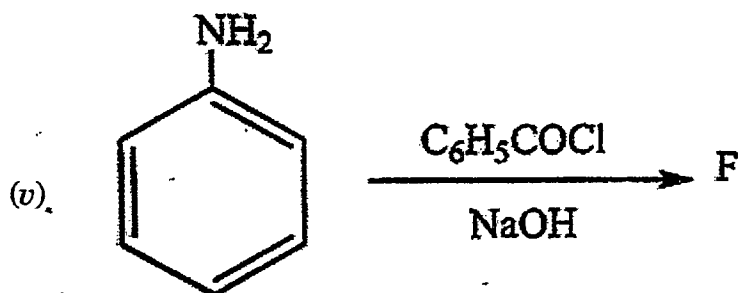
9,6

P.T.O.

5. Complete the following reactions :

15





6. Write short notes on (any three) :

- (i) Oppenauer oxidation
- (ii) Claisen rearrangement
- (iii) Pinacol Pinacolone rearrangement
- (iv) Friedel-Crafts reaction.

5,5,5