[This question paper contains 6 printed pages.]

918 *Your Roll No.* .....

B.Sc. (Hons.) / III **C**

CHEMISTRY – Paper XVI

(Organic Chemistry – IV)

Time: 3 *Hours* *Maximum Marks: 38*

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

Attempt **Six** *questions in all.*
Question No. **1** *is compulsory.*

1. Give Reasons :

(a) Furan is least aromatic of the five membered heterocycles. (1)

(b) Sulphonation of Naphthalene with Conc. H_2SO_4 at 40°C yields mainly the naphthalene -1- Sulphonic acid and at 160°C, the main product is the naphthalene -2- sulphonic acid. (2)

(c) In the electrophilic substitution of iso-quinoline, the electrophile attacks at 5-position. (2)

(d) Congo red is red in alkaline solution but the colour changes to blue in the presence of inorganic acids. (2)

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(e) Pyridine is much stronger base than Pyrrol. (1)

2. (a) Give the formation of Pimelic acid from Tropinic acid. (2)

(b) Explain how the Hofmann Exhaustive methylation can be used for distinguishing between 2- and 3-methyl Pyrrolidine. (2)

(c) Give the synthesis of 2- methyl indole by Fischer-Indole method. Give the mechanism of the reaction. (2)

3. How will you carry out the following transformations ?

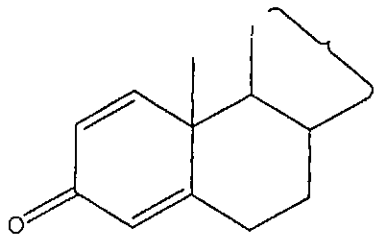
(a) Furan to 2-Furoic acid (2)

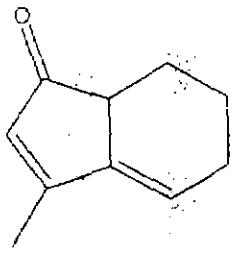
(b) Aniline to 2-methyl quinoline (2)

(c) Phenanthrene to Phenanthrene – 9 – carboxylic acid (2)

4. (a) Calculate λ max for the following compounds :

(i)



(ii) 

(Base values for five membered and six membered cyclic α, β-unsaturated ketones are 202 nm and 215 nm respectively.

Increments for : extended conjugation = 30 nm, exocyclic double bond = 5 nm, α, β, γ, δ ring residues or alkyl groups 10, 12, 18, 18 nm respectively. (2)

(b) How will you distinguish between :

(i) PMR pattern of ordinary ethanol and pure ethane ;

(ii) Ethylene glycol and ethanol by IR spectroscopy (4)

OR

An Organic Compound, C_4H_8O, gave the following spectral data :

IR 2860–2940, 1715 & 1460 cm

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PMR : δ 2.48 (quartet, 3H); 2.12 (singlet, 3H) & 1.07 (Triplet, 2H) in the intensity ratio 2:3:3

Predict the structure of the compound based on the above spectral data. (4)

5. (a) Propose a mechanism to account for the formation of bakelite from the acid catalysed polymerization of Phenol and formaldehyde. (2)

(b) What are thermosetting and thermoplastic polymers ? Illustrate with examples. (2)

(c) How is neoprene synthesized ? What is vulcanization ? (2)

6. (a) Give the product based on Skraup's Synthesis from :

(i) 3-bromo 4 aminotoluene and glycerol

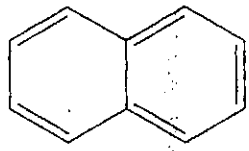
(ii) 1-amino naphthalene and glycerol (3)

(b) How will you obtain :

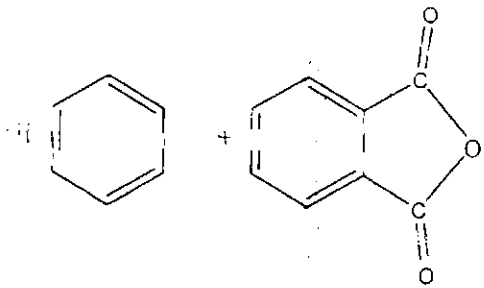
(i) Pyridine from Pyrole

(ii) 4-amino pyridine from pyridine (3)

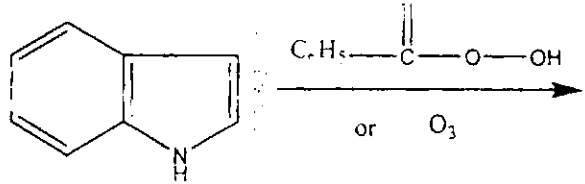
Complete the following reactions :

(i) 

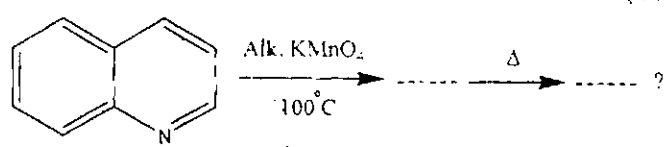
(1)

(ii) 

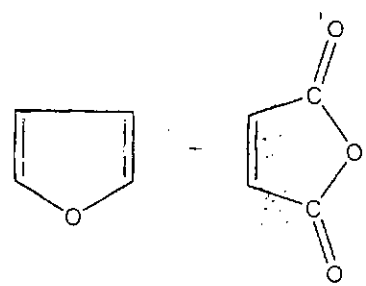
(1)

(iii) 

(1)

(iv) 

(2)

(v) 

(1)

P.T.O.

8. (i) Give the synthesis, uses and side effects of the following drugs :

(a) Aspirin

(b) Phenacetin (1½×2=3)

(ii) Explain the following terms with suitable examples :

(a) Antibiotics

(b) Anti Pyretics (1½×2=3)