

This question paper contains 4 printed pages.]

Your Roll No. ....

**1262**

**B.Sc. (Hons.) / III                      A**  
**CHEMISTRY – Paper XVI**  
**(Organic Chemistry)**

**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 carries 8 marks and rest of the questions are of 6 marks each.

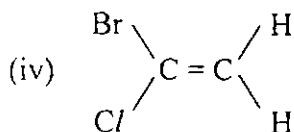
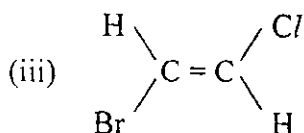
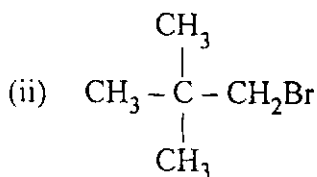
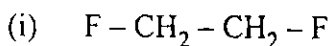
Answer any four parts :

1. (a) How will you show that naphthalene molecule consists of two benzene rings fused together at ortho-positions ? Give the reactions involved.
- (b) Pyridine is a much stronger base than pyrrole. Explain.
- (c) How will you determine the presence of (i) methoxy group, (ii) N-methyl group in an alkaloid ?

- (d) Phenolphthalein is colourless in acidic media, deep pink in alkaline solution but again colourless in stronger alkaline solution. Explain.
- (e) How many NMR signals are observed in methylcyclopropane ? 2 × 4
2. How will you effect the following conversions ?
- (i)  $\beta$ -Naphthol to  $\beta$ -naphthylamine.
- (ii) Naphthalene to Naphthionic acid.
- (iii)  $\alpha$ -Naphthyl amine to 1, 4-diamino-naphthalene. 2 × 3
3. (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 Pyrrole ?
- (ii) 4-amino pyridine from pyridine ? 3
4. (a) Explain why during the synthesis of azo dyes 2
- (i) Temperature is kept low (0 – 5 °C),
- (ii) A suitable pH is required &
- (iii) Diazonium compound is coupled with a compound having highly activating group.

- (b) How is the Schiff's reagent prepared ? 2
- (c) Explain the following with examples : 2
- (i) Mordant dyes
- (ii) Vat dyes
5. (a) Discuss the mode of action of sulpha drugs. How is sulphadiazine synthesized ? Comment on the mode of action of sulpha drugs. 4
- (b) Discuss the synthesis of paracetamol and its use. 2
6. (a) Propose a mechanism to account for the formation of bakelite from the acid catalysed polymerisation 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
7. (a) How is the structure of nicotine established ? 3
- (b) How is tropine converted into : 3
- (i) 2-ethyl pyridine &
- (ii) Tropilidene ?

8. (a) In which of the following molecules, is spin-spin coupling observed? If splitting is observed, give the multiplicity of each kind of proton.



- (b) Explain the following observations :

A concentrated solution of  $\text{C}_2\text{H}_5\text{OH}$  in  $\text{CCl}_4$ , as well as one of  $\text{CH}_2\text{OHCH}_2\text{OH}$ , has a broad O - H stretch near  $3350 \text{ cm}^{-1}$ . On dilution with  $\text{CCl}_4$ , the spectrum of  $\text{CH}_2\text{OHCH}_2\text{OH}$  does not change, but that of  $\text{C}_2\text{H}_5\text{OH}$  shows a sharp O - H stretch at  $3600 \text{ cm}^{-1}$  in addition to the broad band at  $3350 \text{ cm}^{-1}$ .