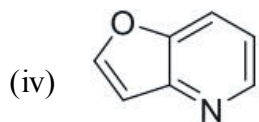
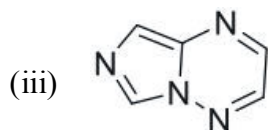
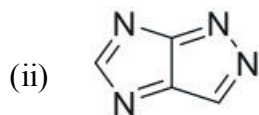
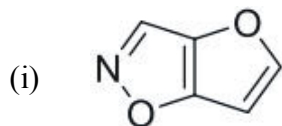


### Section C

5. (a) Write the name of each of the following heterocyclic compounds by Hantzsch- Widman system : 4



- (b) Briefly discuss the synthesis and chemical reactivity of oxazirane and diaziridines. 4,4

6. (a) Write the structure of each of the following heterocyclic compounds by Hantzsch-Widman system : 4

(i) Oxazolo[3,2-a][1,4]diazepine

(ii) Pyrrolo[1,2-b]pyridazine

Roll No. ....

Total Pages : 06

LMDQ/M-24

7525

### ORGANIC CHEMISTRY SPECIAL-IV CHEM-402

Time : Three Hours]

[Maximum Marks : 60

**Note :** Attempt *Five* questions in all, selecting at least *one* question from each Section. All questions carry equal marks.

### Section A

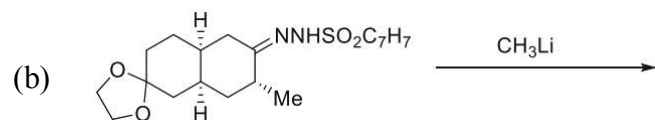
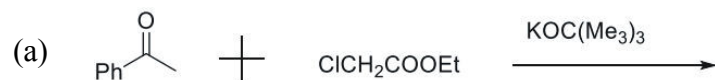
1. Highlight the similarities and differences between Curtius, Schmidt and Lossen rearrangements. Discuss the mechanism of these rearrangements and explain how these rearrangements involve the migration of a group from carbon to nitrogen while retaining the original configuration. 12
2. (a) Explain the purpose and significance of the Wolff rearrangement step in the Arndt-Eistert synthesis. Discuss the key features of this rearrangement and how it enables the chain extension of the original carboxylic acid. 4

(b) Explain the mechanism of the Beckmann rearrangement, highlighting the key steps and the role of the reagents involved. Furthermore, discuss the importance and synthetic applications. **4**

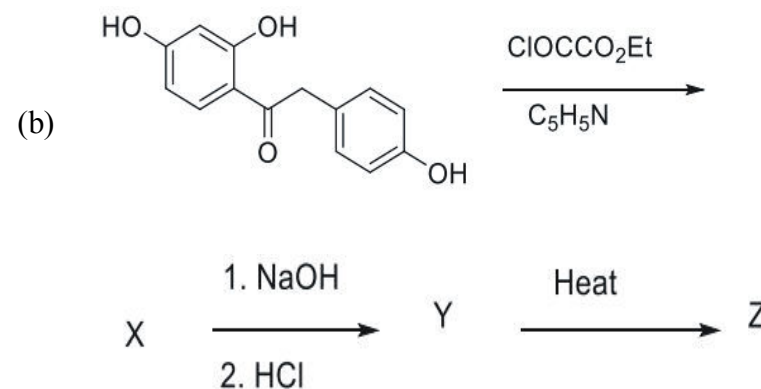
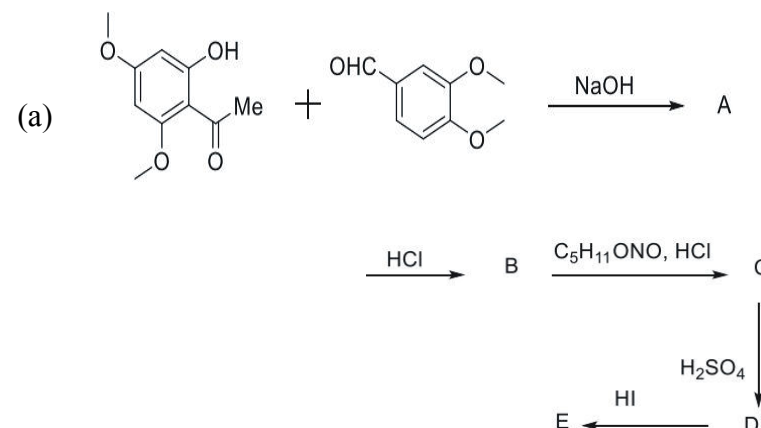
(c) Outline the mechanism of Neber rearrangement. Discuss the stereochemical aspects of the Neber rearrangement and how the configuration of the starting material can affect the stereochemistry of the product. **4**

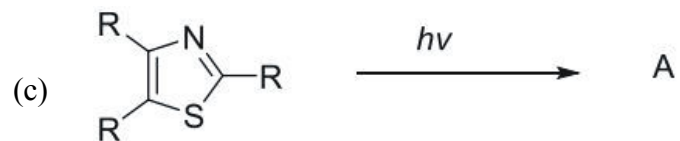
### Section B

3. Predict the product and justify your product with a suitable mechanism : **4×3=12**



4. Complete the following organic transformation and justify your product with a suitable mechanism : **6,6**





8. (a) Comments upon the following statements : Imidazole does not undergo Friedel craft acylation reaction under acidic conditions but it can be acylated under mild basic conditions.
- (b) Discuss the nucleophilic displacement reaction in 2,4-dichloropyrimidine.
- (c) Discuss the ring opening reaction of isoxazole with base.

(iii) Phospholo[2,3-b]pyrrole

(iv) Thiazolo[5,4-d]isoxazole.

- (b) Briefly discuss the synthesis and chemical reactivity of Oxetane and azetidine. 4,4

### Section D

7. Write the product of the following conversion : **3×4=12**

