B. Pharm. 2nd Year 2nd Semester Examination, 2025
Subject: Pharmaceutical Organic Chemistry III (Theory)
Sub Code: BP401T
Full Marks: 75 **Time: 3 hours**

Answer any ***five questions*** taking ***at least one*** from each group but ***not more than two.***

Group A

1. How will you prepare $LiAlH_4$ and $NaBH_4$? Explain the role of NaBH4 in reduction of Carbonyl compounds, acid chlorides, amines, ozonides, ester groups and olefins? Explain with suitable reaction. [3+3+9

Or

What is the mechanism of reduction of $LiAlH_4$? Explain the role of LiAlH4 in reduction of Carbonyl compounds, nitriles, acids and their derivatives? Explain with suitable reaction. [5+10

2. Write the principle, mechanism and applications of Clemmensen reduction. [15

3. Write the principle of the following name reactions. [3x5=15

i) Beckmann rearrangement ii) Wolff-Kishner reduction iii) Birch reduction

Group B

4. (a) Enumerate the reactions of furfuraldehyde which are similar to the reactions of benzaldehyde.
(b) Show different reaction of furoic acid. [10+5

5. Write notes on: [3x5
a) Skraup synthesis (b) Fischer indole synthesis (c) Bischler Napieralsky synthesis

6. (a) Discuss electrophilic substitution reactions of indole.
(b) Discuss orientation and reactivity of thoiphene for substitution reactions [8+7

Group C

7. What is tautomerism? Explain it in the case of pyrazole and imidazole. Write down different synthetic procedures for the preparation of pyrazole and imidazole. Describe electrophilic addition and electrophilic substitution reactions of pyrazole. [3+6+6

8. Discuss different properties of imidazole and pyridine. Explain in detail the synthesis, reactions of pyridine. [8+7