

Name:  
Enrolment No:



UPES  
End Semester Examination, May 2023

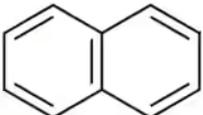
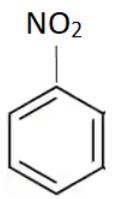
Course: Organic Chemistry III  
Semester: IV  
Program: B.Sc. (H) Chemistry & Int. B.Sc.-M.Sc Chemistry  
Time: 03 hrs.  
Course Code: CHEM 2024

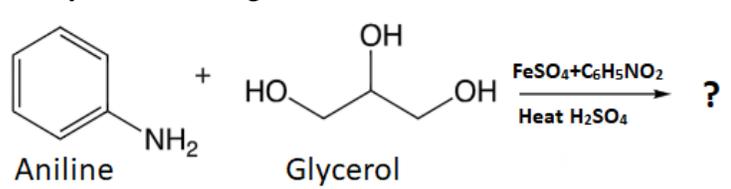
Max. Marks: 100

**Instructions:** Read all the below mentioned instructions carefully and follow them strictly:

- 1) Mention Roll No. at the top of the question paper.
- 2) ATTEMPT ALL THE PARTS OF A QUESTION AT ONE PLACE ONLY.

SECTION A  
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Pyridine is aromatic in nature. Explain.	4	CO1
Q 2	Discuss the mechanism of Hoffmann exhaustive methylation.	4	CO2
Q 3	Complete the following reactions: (a)  Naphthalene $\xrightarrow{\text{H}_2\text{SO}_4}$ ? (b)  Nitrobenzene $\xrightarrow{\text{Zn/HCl}}$ ?	2+2	CO2

Q 4	Give the IUPAC names of the following: (a) Pyrrole (b) Furan	2+2	CO1
Q 5	Draw the structural formula of quinine. What is its use?	4	CO3
<b>SECTION B</b> (4Qx10M= 40 Marks)			
Q 6	Explain why: (a) Pyridine is more basic than pyrrole and aniline. (b) Thiophene is less basic than Furan.	5+5	CO1
Q 7	Identify the following reaction and discuss the related mechanism:  Aniline + Glycerol $\xrightarrow[\text{Heat H}_2\text{SO}_4]{\text{FeSO}_4 + \text{C}_6\text{H}_5\text{NO}_2}$ ?	10	CO1
Q 8	What is the isoprene rule? Indicate the isoprene units in the structures of citral and $\alpha$ - pinene.	10	CO1
Q 9	Carry out the following conversions: (a) Benzene to naphthalene. (b) Anthracene to 9,10-anthraquinone. OR (a) Phthalic anhydride to anthracene. (b) Phenanthrene to 9-chlorophenanthrene.	5+5	CO2
<b>SECTION-C</b> (2Qx20M=40 Marks)			
Q 10	(a) Give two examples of fused heterocyclic compounds. Give Paul Knorr synthesis of pyrrole with mechanism. (b) What happens when pyrrole is treated with: (i) $\text{HNO}_3/\text{CH}_3\text{COOH}$ (ii) $\text{CHCl}_3$ (iii) $\text{HCN}$ Give the mechanism to any one of them.	10+10	CO1
Q 11	(a) Carry out the following conversion: (i) o-Amino benzaldehyde to Quinoline (ii) Thiophene to tetrahydrothiophene (b) What happens when thiophene undergoes the following reactions: (i) Bromination (ii) Mercuration (iii) Reduction (iv) Oxidation (v) Chloromethylation	10+10	CO1

OR

- (a) Discuss the Hantzsch synthesis of pyrrole with mechanism.  
(b) Give the mechanism of nitration and sulphonation of Furan.