Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, May 2024

Course: Organic Chemistry **Semester: II**

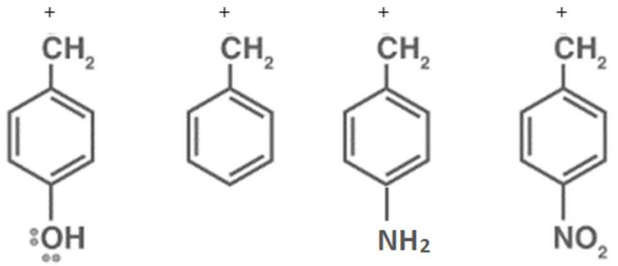
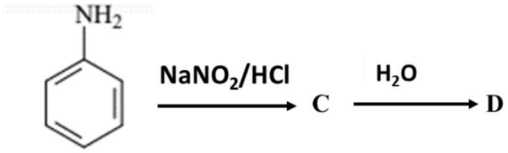
Program: BSc (Hons) Geology, BSc (H) Maths by Research, BSc (H) Physics by Research

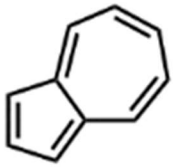
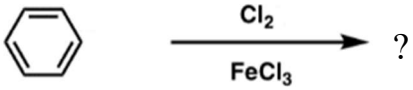
Time : 03 hrs.

Course Code: CHEM1027 **Max. Marks: 100**

Instructions: Attempt all questions. Internal choices are provided.

SECTION A

S. No.		Marks	CO
Q 1	Explain 'Inductive effect' by giving suitable example.	**4**	**CO1**
Q 2	Arrange the following carbocations in the order of increasing stability:  **A** **B** **C** **D** Give reason for your answer.	**4**	**CO1**
Q 3	Mention the products (A to D) for the following reactions: a) $CH_3C{\equiv}N + CH_3CH_2MgBr \xrightarrow{\text{Ether}} A \xrightarrow{H_3O^+} B$ b) 	**2 + 2**	**CO2**

Q 4	Predict the aromaticity in the following compounds using Huckel's rule:     **(I)** **(II)** **(III)** **(IV)**	**1 x 4**	**CO2**
Q 5	Execute the following organic conversions: a) Benzene to 2,4,6-tribromoaniline b) 1-Butene to 2-Butene	**2 + 2**	**CO2**
	SECTION B		
Q 6	a) Define hyperconjugation by giving an example of propene. b) Demonstrate resonance in nitrobenzene and aniline.	**5 + 5**	**CO1**
Q 7	a) A and B are two functional isomers of compound C_3H_6O. On heating with NaOH and I_2, isomer B forms yellow precipitate of iodoform whereas isomer A does not form any precipitate. Write the formulae of A and B. b) 'Halogenation in alkanes is selective with bromine but gives multiple products with chlorine'. Explain	**5 + 5**	**CO2**
Q 8	Complete the following reaction and give reaction mechanism: 	**10**	**CO3**
Q 9	How will you distinguish between ethylamine and dimethylamine using Hinsberg test and Nitrous acid test. OR Elaborate how Benzenediazonium chloride can be used to prepare benzene, bromobenzene, fluorobenzene, iodobenzene and phenol. Give chemical reactions.	**10**	**CO2**
	SECTION-C		
Q 10	a) Explain the dehydrohalogenation of 2-Bromobutane. b) Mention two synthesis methods of phenylmagnesium bromide. What happens when it reacts with (i) H_2O (ii) C_2H_5OH (iii) CO_2	**10 + 10**	**CO2**

11	a) Write any <u>four</u> preparation methods for ethyl chloride. b) Describe nucleophilic substitution reaction in alkyl halides giving suitable example and reaction mechanisms OR a) Mention any <u>four</u> synthesis methods for nitrobenzene. b) Illustrate reaction mechanism of Friedel Craft alkylation of benzene.	**10 + 10**	**CO3**