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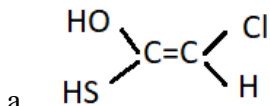
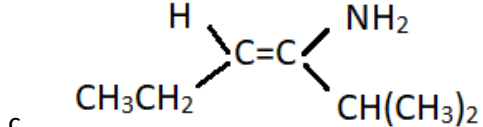
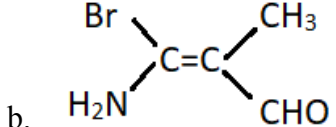
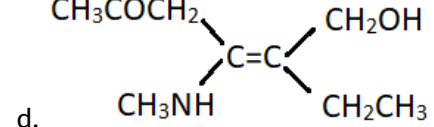
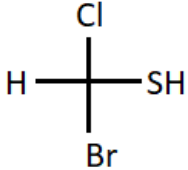
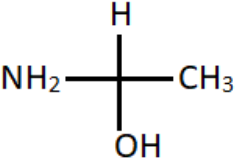
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, May 2022

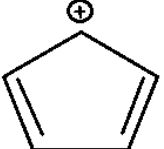

Course: Organic Chemistry I
Program: B.Sc. (H) Chemistry
Course Code: CHEM 1005

Semester: II
Time : 03 hrs.
Max. Marks: 100

Instructions:

SECTION A
(5Qx4M=20Marks)

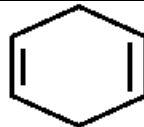
S. No.		Marks	CO
Q 1	Classify the given species into Electrophile or Nucleophile Cl^- , NO_2^+ , NH_3 , BF_3	4	CO1
Q 2	Assign E and Z notations in the following compounds: <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>a.</p>  </div> <div style="text-align: center;"> <p>c.</p>  </div> </div> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;"> <p>b.</p>  </div> <div style="text-align: center;"> <p>d.</p>  </div> </div>	4	CO1
Q 3	Assign R/S nomenclature <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>a.</p>  </div> <div style="text-align: center;"> <p>c.</p>  </div> </div>	4	CO1

	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> $\begin{array}{c} \text{CH}_2\text{OH} \\ \\ \text{Br} - \text{C} - \text{H} \\ \\ \text{CH}_2\text{COCH}_3 \end{array}$ <p>b.</p> </div> <div style="text-align: center;"> $\begin{array}{c} \text{CH}=\text{CH}_2 \\ \\ \text{OHC} - \text{C} - \text{H} \\ \\ \text{CH}_2\text{COCl} \end{array}$ <p>d.</p> </div> </div>		
Q 4	Discuss the optical isomerism in tartaric acid.	4	CO1
Q 5	Complete the reactions: <i>a.</i> $\text{CH}_2\text{Br}-\text{CH}_2\text{Br} \xrightarrow{\text{Zn dust}}$ <i>b.</i> $\text{C}_2\text{H}_5\text{COONa} \xrightarrow{\text{NaOH/CaO}}$	4	CO2
SECTION B (4Qx10M= 40 Marks)			
Q 6	Which type of reactions are the characteristic reactions of aromatic compounds. Explain the mechanism of halogenation of benzene.	10	CO3
Q 7	What happens when <i>a.</i> Toluene is oxidized with alkaline KMnO_4 . <i>b.</i> Acetylene is passed through red hot iron tube. <i>c.</i> Cyclopropane reacts with HBr . <i>d.</i> Propyne reacts with ammonical solution of AgNO_3 .	10	CO2
Q 8	Discuss Baeyer Strain theory for the stability of cycloalkanes.	10	CO1
Q 9	Explain why <i>a.</i> Benzene contains three double bonds still undergoes substitution reactions rather than addition reactions. <i>b.</i> Acetylene reacts with strong alkali metals like sodium. <i>c.</i> Aniline is weakly basic in nature.	3+3+4	CO2
SECTION-C (2Qx20M=40 Marks)			
Q 10	Conversion <i>a.</i> Propyne to 2-butyne <i>b.</i> Acetylene to mesitylene <i>c.</i> Acetylene to toluene <i>d.</i> Acetylene to acetone	20	CO2
Q 11	(i) Classify the following compounds into aromatic, anti-aromatic and non-aromatic category with proper justification: <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>a.</p>  </div> <div style="text-align: center;"> <p>d.</p>  </div> </div>	10 + 10	CO2

b.



e.



c.



(ii) Explain the following terms and give one examples each for:

- a. Hydrogenation
- b. Dehydration
- c. Sulphonation
- d. Alkylation