



**NAVVRACHANA
UNIVERSITY**

a UGC recognized University

School: School of Science
 Program: B. Sc. in Chemistry
 Year: 2nd Semester: 3rd
 Examination: End Semester Examination
 Examination year: December - 2021

Course Code: CH255

Course Name: ORGANIC CHEMISTRY-I

Date: 03/12/2021

Time: 08:30 am - 10:30 am

Total Marks: 40

Total Pages: 3

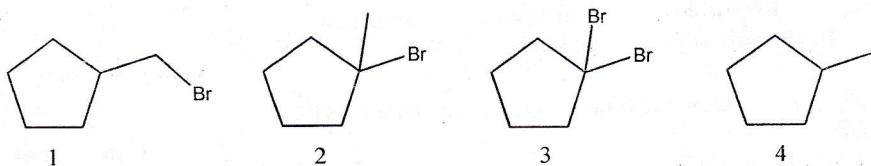
Instructions:

- Write each answer on a new page.
- Use of a calculator is not required.
- * COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

Q. No.	Details	Marks	COs*	BTL#
Q.1	Choose the most appropriate answers	8		
	A. For Electrophilic aromatic substitution of benzene which of the following is not true? a) A non-aromatic intermediate is formed b) Benzene acts as an electrophile c) A proton is lost in the final step d) Resonance forms are important			
	B. Which of the following statement is incorrect for aromatic compounds? a) Aromatic compounds are planar b) Having 4n electrons c) Aromatic compounds are cyclic d) Aromatic compound exhibits continuous delocalization of pi electrons		CO1, CO2, CO3, CO4	BT1, BT2, BT3, BT4, BT5
	C. Which of the following is not associated with electrophilic aromatic substitution? a) The formation of Nitro benzene b) The formation of benzyne c) The formation of bromobenzene d) The formation of benzene sulfonic acid			
	D. If hydrogen and alkene are passed over finely divided nickel, it gives off a) Alcohol b) Alkanes c) Aldehydes			

d) Ketones

E. Select the major product of the following reaction

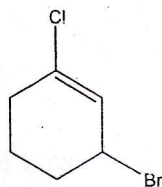


- a) 1
- b) 2
- c) 3
- d) 4

F. Hyperconjugation involves the overlap of the following orbitals

- a) $\sigma - \sigma$
- b) $\sigma - p$
- c) $p - p$
- d) $\pi - \pi$

G. The IUPAC name of the compound shown below is



- a) 2-bromo-6-chlorocyclohex-1-ene
- b) 6-bromo-6-chlorocyclohexene
- c) 3-bromo-1-chlorocyclohexene
- d) 1-bromo-3-chlorocyclohexene

H. How will Arrange the following groups in the order of decreasing (-I) effect?

- a) $\text{CN} > \text{F} > \text{Br} > \text{Cl} > \text{COOH} > \text{I} > \text{H}$
- b) $\text{H} > \text{COOH} > \text{CN} > \text{I} > \text{Cl} > \text{F} > \text{Cl}$
- c) $\text{COOH} > \text{CN} > \text{F} > \text{Br} > \text{Cl} > \text{I} > \text{H}$
- d) $\text{CN} > \text{COOH} > \text{F} > \text{Cl} > \text{Br} > \text{I} > \text{H}$

Q.3

Match the following

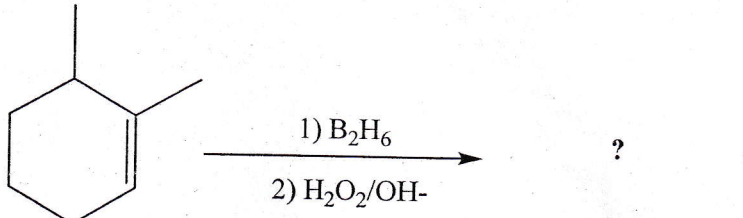
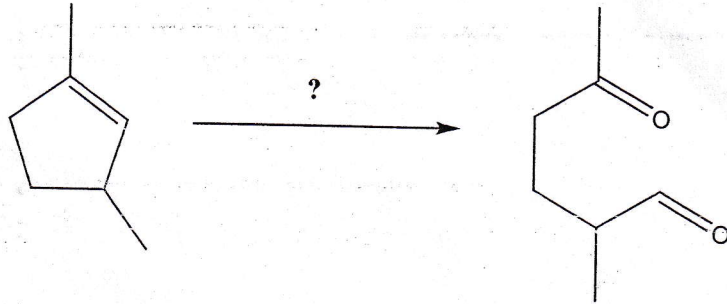
a) $\text{Pd}/\text{CaCO}_3 + \text{Pb}(\text{CH}_3\text{CO})_2 +$
Quinoline

i. zinc amalgam and conc.
HCl

2

CO1,
CO2,
CO3,

BT1,
BT2,
BT3

	b) Clemmenson reduction	ii. Lindlar catalyst		
	c) Organomagnesium compounds	iii. nickel-based hydrogenation		
	d) Sabatier Senderens Reaction	iv. Grignard reagent		
Q.4	<p>A. Carry out the following conversions</p> <p>a) m- xylene to Isophthalic acid</p> <p>b) Toluene to trichloromethyl benzene</p> <p>B. Write a short note on Friedel–Crafts alkylation.</p> <p>C. </p> <p>D. </p>	8	CO1, CO3, CO4	BT1, BT2, BT3, BT4, BT5
Q.5	<p>A. In case of Naphthalene Electrophilic substitution reaction will takes place at C₁ position but not at C₂ position. Justify.</p> <p>B. Write a short note on Bayer's strain theory</p> <p>C. What is the Difference Between E1 and E2 Reactions?</p> <p>D. Illustrate the Oxymercuration-Demercuration reaction with mechanism</p>	12	CO1, CO2, CO3, CO4	BT1, BT2, BT3, BT4
Q.6	<p>Giving suitable explanation, classify the following compounds as aromatic, non-aromatic, and anti-aromatic</p> <p>a) Cyclobutadiene</p> <p>b) Cyclopropenyl anion</p> <p>c) Cyclooctatetraene</p> <p>d) Cyclopentadienyl anion</p> <p>e) Cycloheptatrienyl anion</p>	5	CO4	BT1, BT2, BT3, BT4, BT5
Q.7	Illustrate the energy profile diagram of cyclohexane with all the conformations.	5	CO1, CO2	BT1, BT2, BT3, BT4, BT5

*****End of Question Paper*****