



Register Number:  
Date: /04/2020

**ST. JOSEPH'S COLLEGE (AUTONOMOUS), BANGALORE-27**

**B.Sc. CHEMISTRY – IV SEMESTER**

**SEMESTER EXAMINATION: APRIL 2020**

**CH 418 : CHEMISTRY**

**Time: 1 ½ h**

**Max. Marks: 35**

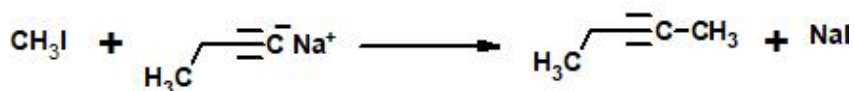
**This paper contains THREE printed pages and THREE parts**

**PART A**

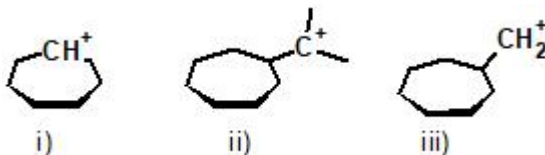
Answer any **THREE** of the following questions

**3 x 2 = 6**

1. Identify the nucleophile, substrate, leaving group and the product of the following reaction.



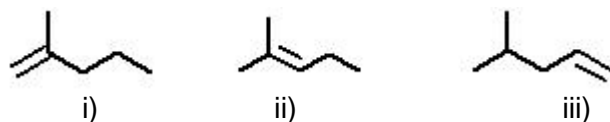
2. Arrange the following carbocations in order of increasing stability.



3. Using the (E) and (Z) designations, give the IUPAC names of the following compounds.



4. Among the following, identify the most stable alkene with suitable explanation.



5. Name the following reaction and write the product formed.

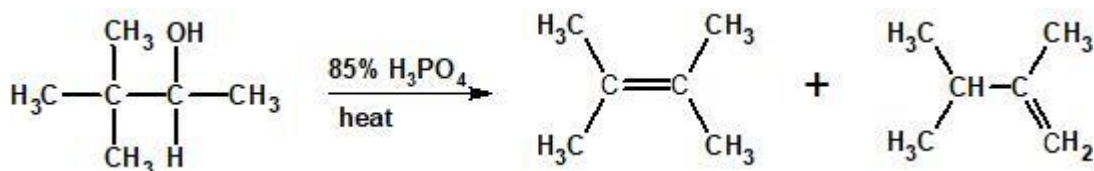


## PART B

Answer any **FOUR** of the following:

**4 X 6 = 24**

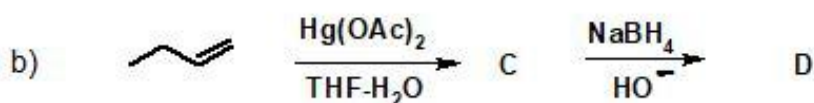
6. a) Give the mechanism of dehydrohalogenation of 2-bromopropane with sodium ethoxide in ethanol.  
b) Explain the solvent effects in  $S_N2$  reactions.
7. Explain how the following factors influence substitution versus elimination reactions of alkyl halides.  
a) Structure of the substrate  
b) Size of the base or nucleophile
8. a) Identify the major and minor product in the following reaction. Explain the formation of the major product (mechanism not required).



- b) Complete the following reaction. Identify the kinetic and thermodynamic products.



9. Identify **A**, **B**, **C** and **D** in the following reactions,



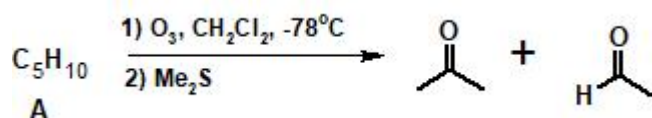
10. a) Give the mechanism of electrophilic addition of bromine to trans-2-butene. Comment on the stereochemistry of the product.  
b) Outline the synthesis of 1,2-diphenylethyne from 1,2-diphenylethene.
11. Give the synthesis of an epoxide. Explain acid catalysed and base catalysed ring opening of unsymmetrical epoxides using an example each.

### PART C

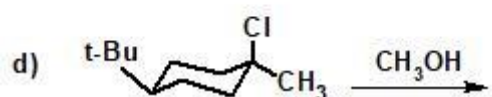
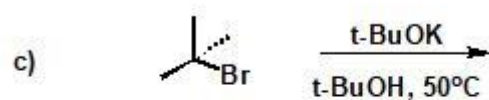
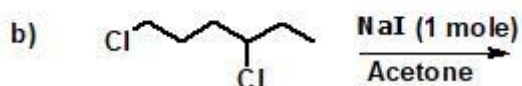
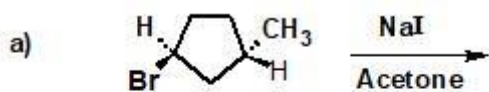
Answer any **ONE** of the following:

**1 X 5 = 5**

12. a) Compound **A** with molecular formula  $C_5H_{10}$  yielded the given products upon ozonolysis followed by reduction. Provide the structure of **A**.



- b) An alkene with formula  $C_8H_{16}$  on oxidation with hot basic potassium permanganate yielded 1-propanoic acid and 1-pentanoic acid. What is the structure of this alkene?
13. Give the structures of the product/s with correct stereochemistry wherever applicable, in each of the following reactions.



CH418\_C\_20