

Reg. No:.....

Name:.....

**BSc DEGREE END SEMESTER EXAMINATION OCTOBER 2015**

SEMESTER – 3: CHEMISTRY (CORE)

COURSE: U3CRCHE3 – FUNDAMENTALS OF ORGANIC CHEMISTRY

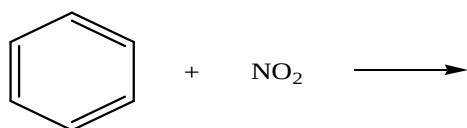
Time: 3 Hours

Max. Marks: 60

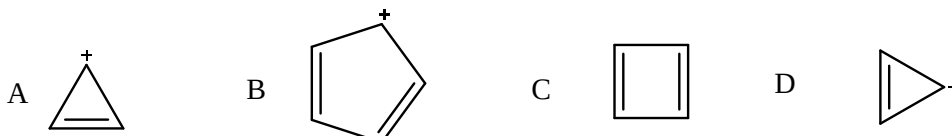
**Section A**

**(Answer all questions, each question carries 1 mark)**

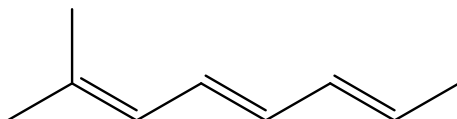
1. The IUPAC name for  $\text{CH}_3\text{-C}\equiv\text{C-CH}_2\text{-CH}_2\text{-OH}$  is .....
2. Delocalisation of electrons by the overlap of a  $\sigma$  bond orbital with a  $\pi$  or p orbital is called .....
3. Write the structure of  $\sigma$  complex in the following reaction



4. The number of enantiomers of the compound  $\text{CH}_3\text{-CH(Br)-CH(Br)-COOH}$  is .....
5. Friedel-Crafts reaction of benzene with ethyl chloride yields .....
6. Which of the following is aromatic compound



7. There are ..... stereo isomers in



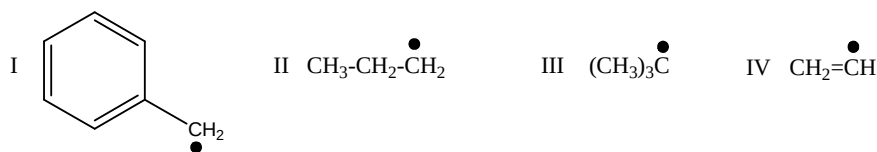
8. Which among the following has the least calculated angle strain according to Baeyer's strain theory.  
A. Cyclopropane      B. Cyclobutane      C. Cyclopentane      D. Cyclohexane

(1 x 8 = 8)

**Section B**

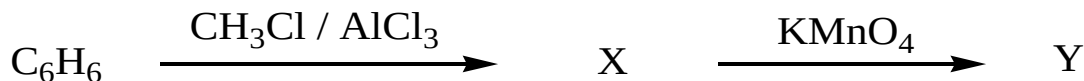
**(Answer any six questions, each question carries 2 marks)**

9. Arrange the following radicals in the increasing order of stability. Give reason.

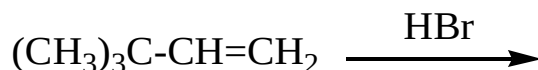


PTO

10. Distinguish between conformation & configuration.  
 11. Out of the following compounds which one can exhibit cis-trans isomerism? Draw the isomers.  
 a) 2-butyne b) 2-butene c) 2-butenol d) 1-butanol  
 12. What are carbenes? Give two examples.  
 13. In the reaction sequence, predict X & Y.

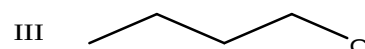
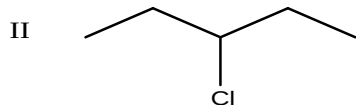
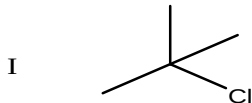


14. What are nonbenzenoid aromatic compounds? Give examples.  
 15. Major addition product in the following reaction is



Give reason.

16. In the following halogen compounds, which compound undergoes fastest  $\text{S}_{\text{N}}1$  reaction?



(2 x 6 = 12)

### Section C

(Answer any four questions, each question carries 5 marks)

17. Write the mechanism for the dehydrohalogenation of ethyl bromide.  
 18. Discuss the relative stability of the conformations of methyl cyclohexane.  
 19. Explain the stability of cyclopentadienyl anion.  
 20. How many stereo isomers are there with the formula  $\text{CHO}-\text{CHOH}-\text{CHOH}-\text{CH}_2\text{OH}$ ? Identify the enantiomers in these isomers.  
 21. How pericyclic reactions are classified? Give one example to each.  
 22. Give the mechanism of nitration of naphthalene.

(5 x 4 = 20)

### Section D

(Answer any two questions, each question carries 10 marks)

23. Discuss and illustrate the significance of the various electron displacement effects in organic molecules.  
 24. Write the structures of the conformations of butane. Discuss their relative stability.  
 25. Discuss the geometrical isomerism in alkenes taking an example. Also discuss E-Z system of notations.  
 26. Explain the term aromaticity. State Huckel's rule and discuss its significance on the basis of MO theory. Illustrate its applicability to cyclic compounds taking various examples.

(10 x 2 = 20)

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