Reg. No…….. Name……..

# B. Sc. DEGREE END SEMESTER EXAMINATION OCTOBER 2019

SEMESTER – **3: CHEMISTRY (CORE COURSE)**

COURSE: **U3CRCHE3, FUNDAMENTALS OF ORGANIC CHEMISTRY**

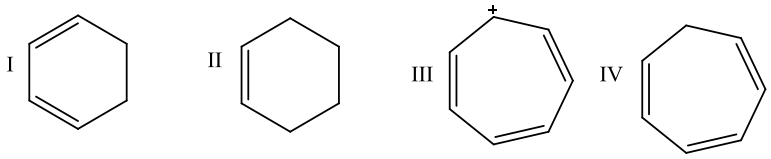
*(For Supplementary 2014 Admissions)*

Time: Three Hours Max. Marks : 60

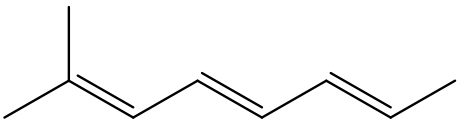
## Section A

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

1. Which of the following is aromatic




2. Delocalisation of electrons by the overlap of a σ bond orbital with a π or p orbital is called ……..
3. The IUPAC name for $CH{\equiv}C\text{-}CH_2\text{-}CH(OH)\text{-}CH_3$ is …….
4. The number of enantiomers of the compound $CH_3\text{-}CH(Br)\text{-}CH(Br)\text{-}COOH$ is …….
5. What is the hybridization of the central atom in $SF_6$?
6. The carbon bearing an unpaired electron in a simple alkyl free radical is ……hybridized.
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
9. Which of the following compound is optically active?

   a) Butan-1-ol b) Butan-1-al c) Butan-2-ol d) 2-methyl propan-2-ol

(1 x 8 = 8)

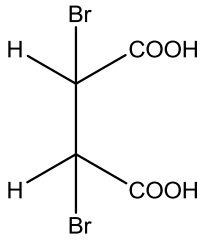
## Section B

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

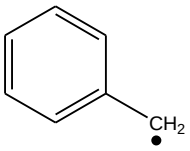
10. Out of the following compounds which one show geometrical isomerism? Draw the isomers

    a) cyclohexene b) 2-hexene c) 3-hexyne d) 1,1-diphenyl ethylene
11. Distinguish between orbit and orbital.
12. What is packing fraction?

13. Would you expect the following compound to be optically active? Explain.




14. What are carbenes? Give two examples.
15. Arrange the following radicals in the increasing order of stability. Give reason.

I 


II $CH_3$-$CH_2$-$\dot{C}H_2$ III $(CH_3)_3\dot{C}$ IV $CH_2$=$\dot{C}H$

16. What are nonbenzenoid aromatic compounds? Give examples.
17. Distinguish between enantiomers and diastereomers. (2 x 6 = 12)

## Section C

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

18. Write the mechanism for the dehydrohalogenation of ethyl bromide.
19. Explain two important nuclear models.
20. Explain how the benzyl anion attains stabilization?
21. How many stereo isomers are there with the formula CHO-CHOH-CHOH-$CH_2$OH? Identify the enanatiomers in these isomers.
22. State and explain Huckel's rule.
23. Give the mechanism of nitration of naphthalene. (5 x 4 = 20)

## Section D

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

23. (a) What is meant by VSEPR theory? List its various postulates.

    (b) Explain the shape of $PCl_5$ molecule. Do you expect all P-Cl bond lengths to be equal?24
24. Write the structures of the conformations of butane. Discuss their relative stability.
25. Explain the term aromaticity. State Huckel's rule and discuss its significance on the basis of M O theory. Illustrate its applicability to cyclic compounds taking various examples.
26. Discuss briefly the significance of various electron displacement effects in organic synthesis.

(10 x 2 = 20)

**********