

## FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2012

(CCSS)

Chemistry

CH 4B 07—ORGANIC CHEMISTRY—I

Time Three Hours

Maximum Weightage 30

1. Multiple choice and fill in the blanks type questions. Answer all *twelve* questions

I. The shape of a carbocation is

- a. Trigonal b. Tetrahedral c. Pyramidal d. V-shaped

Addition of HBr to 1,3-butadiene above 40°C gives mainly

- a. 3-bromo-1-butene b. 1-bromo-2-butene c. 2-bromo-1-butene d. None of the above

A reagent used for the *cis* hydroxylation of alkenes is

- a. OsO<sub>4</sub> b. Perbenzoic acid c. Performic acid d. none of the above.

t. Which alkene among the following is most stable?

- (*is*-2-butene h. *Trans*-2-butene c. 1-butene d. all are equally stable

*t*-butyl benzene on oxidation with KMnO<sub>4</sub> gives -----

- a. benzoic acid b. Phthalic acid c. Terephthalic acid d. No reaction

harasch effect is observed in the addition of ----- to an unsymmetrical alkene.

- a. 1113r b. HCl c. I<sub>2</sub> d. all of the above

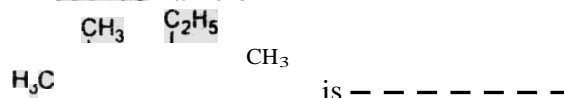
7. Compounds having same sequence of covalent bonds but differ in relative position of the atoms or groups in space is called -----

- a. Metamers b. Stereoisomers c. Functional isomers d. None of the above

8. *dl* tartaric acid is optically inactive due to ----- compensation.

9. ----- is a neutral nucleophile.

10. The IUPAC name of



11. Geraniol is used for -----

12. ----- is -----

(12 ×  $\frac{1}{4}$  = 3 weightage)

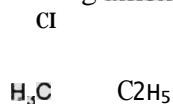
II. Short answer type questions. Answer all nine questions.

13. What is Corey-House reaction?

14. Draw the most stable and least stable conformations of n-butane.

15. Ethyne reacts with ammoniacal cuprous chloride while ethylene does not. Why?

16. Name the following alkene giving emphasis to the stereochemistry.



Turn over

17. What are **nitrenes**?
18. Draw the Fischer projection formula of **1-chloroethane-1,2-diol**
19. How will you convert ethylene to ethanol by **hydroboration** reaction.
20. Explain the term '**diastereomers**' citing a suitable example.
21. Give the mechanism of conversion of benzene to toluene.

(9 x 1 = 9 weightage)

III. Short essays or paragraph questions. Answer any *five* questions.

22. Discuss the structure of natural rubber.
23. Explain briefly the synthetic applications of ethylene and propylene.
24. Compare the stabilities of the boat and the chair conformations of **cyclohexane**.
25. Discuss briefly Bayer's strain theory.
26. Explain the structure and stability of **carbenes**.
27. Compound A (**C<sub>4</sub>H<sub>6</sub>**) adds two molecules of hydrogen but does not react with **ammoniacal** silver nitrate. On treatment with **HgSO<sub>4</sub>** in dilute sulphuric acid, it gave B (C<sub>4</sub>H<sub>8</sub>). What are A and B?
28. Discuss briefly the preparation and applications of PVC.

(5 x 2 = 10 weightage)

IV. Essay questions. Answer any two questions.

29. Write notes on asymmetric synthesis and optical activity of **allenes**.
30. Discuss the mechanism of **nitration** of toluene and explain the orientation effect of **Substituents** in the nitration of phenol and nitrobenzene
31. Give a brief account of any three electron displacement effects in organic molecules.

(2x4 = 8 weightage)