

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL/MAY 2015

(U.G.—CCSS)

Core Course—Chemistry

CH 4B 07—ORGANIC CHEMISTRY – I

Time : Three Hours

Maximum : 30 Weightage

*Write equations wherever necessary.***Section A**

I. Multiple choice and fill in the blanks type questions. Answer all *twelve* questions. Each question carries a weightage of $\frac{1}{4}$:

1 The type of hybridisation of carbon in ethane is :

- (a) sp . (b) sp^2 .
(c) sp^3 . (d) sp and sp^2 .

2 Which of the following hydrocarbon is obtained by the Wurtz reaction between CH_3Br and C_2H_5Br with metallic sodium in ether medium ?

- (a) Ethane. (b) Propane.
(c) Butane. (d) All these.

3 The cyclo alkane which is not expected to have ring strain is :

- (a) Cyclopropane. (b) Cyclobutane.
(c) Cyclohexane. (d) Cyclopentane.

Which of the following compound will exhibit geometrical isomerism ?

- (a) Butane. (b) 2-butyne.
(c) 2-butene. (d) All these.

Along the carbo cations Benzyl carbo cation (A), Allyl Carbo cation (B) and a secondary carbo cation (C), the order of the stability is :

- (a) $A > B > C$. (b) $B > A > C$.
(c) $C > B > A$. (d) $C > A > B$.

The molecule which exhibits optical isomerism is :

- (a) Isobutyl chloride. (b) Sec. butyl chloride.
(c) Tert. butyl chloride. (d) n-butyl chloride.

Turn over

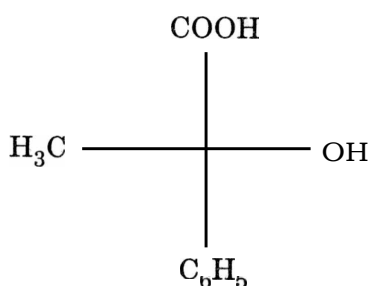
- 7 Calcium carbide on hydrolysis gives _____
- 8 2-butyne on reduction with sodium in liquid ammonia gives _____
- 9 Natural rubber is a polymer of _____
- 10 Optical isomers which are mirror images of each other are known as _____
- 11 An example of a meta directing group is _____
- 12 Nitration of aromatic compound is an example of _____ substitution.

(12 x $\frac{1}{4}$ = 3 weightage)

Section B

- II.** Short Answer type questions. Answer all *nine* questions. Each question carries a weightage of **1**.

- 13 What is resonance ? Explain with an example.
- 14 What is Kolbe reaction ?
- 15 How is polyethylene prepared ?
- 16 Draw the structure of geraniol.
- 17 What is hydroboration ?
- 18 Draw the D and L forms of Erythrose.
- 19 Assign the absolute configuration (R or S) of the molecule



- 20 What is meant by C is hydroxylation ?
- 21 Write any two characteristics of enantiomers.

(9 x 1 = 9 weightage)

Section C

- III.** Short essays *or* paragraph questions. Answer any *five* questions. Each question carries a weightage of 2 :

- 22 What is Corey-House reaction ?
- 23 Explain Steric effect with one example.
- 24 How will you prepare 1-butyne from acetylene ?
- 25 Discuss the E and Z designation of geometrical isomers.
- 26 What are addition polymers ? How are teflon polymers prepared ?

27 Discuss the nitration of benzene with mechanism.

28 Write briefly on asymmetric synthesis.

(5 x 2 = 10 weightage)

Section. D

IV. Essay questions. Answer any *two* questions. Each question carries a weightage of 4 :

29 (i) Outline Bayer's strain theory. Calculate the angle strain for various alicyclic compounds and predict their relative stability.

(ii) Write a note on acidity of alkynes.

30 (i) What are free radicals ? Give examples.

(ii) Write a short note on the stability of free radicals.

31 (i) Define aromaticity and state Huckel's rule.

(ii) Discuss the structure and stability of benzene.

(2 x 4 = 8 weightage)