

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, MAY 2011

(CSS)

Core Course—Chemistry

CH 4B 07—ORGANIC CHEMISTRY—I

Time : Three Hours

Maximum Weightage : 30

Write equations wherever necessary.

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

1 Corey-House reaction is governed by :

- (a) Electrophilic substitution.
- (b) Nucleophilic substitution.
- (c) Free radical substitution.
- (d) Polymerisation reaction.

2 The most stable conformation of *n*-butane is the _____ conformation.

- (a) eclipsed.
- (b) staggered.
- (c) skew.
- (d) anti.

3 Which alkene among the following is most stable ?

- (a) *Cis*-2-butene.
- (b) *Trans*-2-butene.
- (c) 1-butene.
- (d) all are equally stable.

4 Kharasch effect is observed in the addition of _____ to an unsymmetrical alkene.

- (a) HBr.
- (b) HCl.
- (c) HI.
- (d) all of the above.

5 A reagent for *cis* hydroxylation is :

- (a) OsO₄.
- (b) H₂O₂/H⁺.
- (c) benzoyl peroxide.
- (d) none of the above.

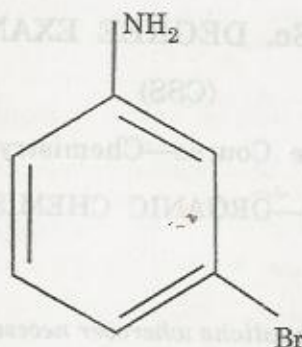
6 _____ is a neutral electrophile.

7 The reagent used for the oxidation of toluene to benzoic acid is _____.

8 The shape of carbocation is _____.

Turn over

- 9 *Meso* tartaric acid is optically inactive due to _____ compensation.
- 10 The IUPAC name of :



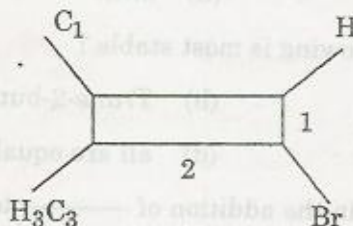
is _____

- 11 Citral is used for _____.
- 12 PMMA is _____.

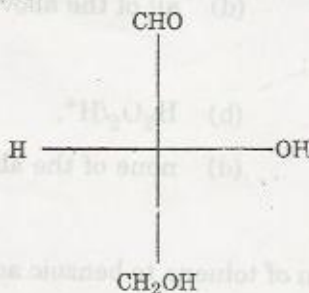
(12 × ¼ = 3)

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

- 13 What is Wurtz reaction ?
- 14 Draw the most stable conformation of methylcyclohexane.
- 15 What happens when ethyne is passed over ammoniacal silver nitrate ?
- 16 Name the following alkene : —



- 17 What are nitrenes ?
- 18 Assign the absolute configuration of the following molecule : —



- 19 Draw an optically active compound, does not having a chiral carbon.
- 20 Write the correct order of stability of carbanions.
- 21 Draw the structure of Limonene.

(9 × 1 = 9)

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

- 22 Illustrate asymmetric synthesis citing an example.
- 23 Explain the Haworth's synthesis of naphthalene.
- 24 Give a brief account of the structure of natural rubber.
- 25 Discuss briefly the importance of the following reactions : —
- (a) Ozonolysis.
- (b) Periodic acid oxidation.
- 26 Explain the structure and shape of ethylene molecule.
- 27 Give a brief note on ring strains in cyclopropane and cyclobutane.
- 28 Explain the mechanism of addition of HBr to propene in the presence and absence of Peroxides.

(5 × 2 = 10)

IV. Essay questions. Answer any *two* questions :

- 29 Write notes on optical isomerism, methods of resolution and Optical activity of Biphenyls.
- 30 Discuss the mechanisms of nitration and sulphonation of naphthalene and bromination of benzene.
- 31 Discuss the structure, hybridisation and stability of carbocations and carbenes.

(2 × 4 = 8)