

RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous Degree College with P.G. Section under University of Calcutta)

B.A./B.SC. SECOND SEMESTER EXAMINATION, MAY 2011

FIRST YEAR

CHEMISTRY (General)

Date : 26/05/2011

Time : 10 am – 11 am

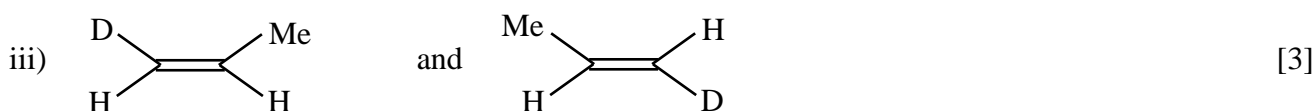
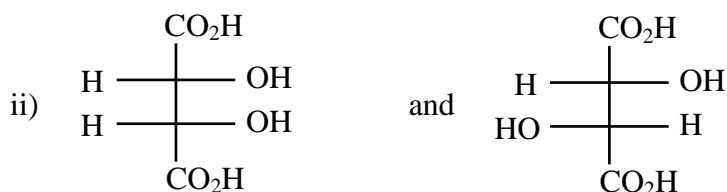
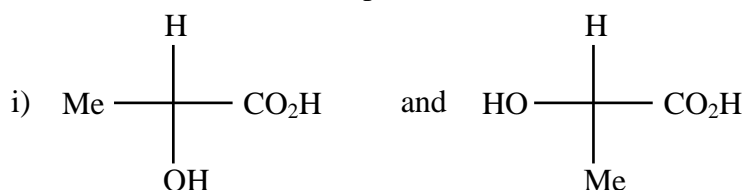
Paper : II

Full Marks : 25

Unit – I

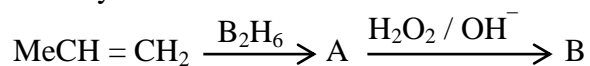
Answer any three questions:

1. a) Illustrate with examples three important rules of resonance. [3]
b) Between FCH_2COOH and ClCH_2COOH which one is stronger acid and why? [2]
2. a) Differentiate between (any two) :
i) Homolytic and heterolytic bond cleavage
ii) Enantiomer and diastereomer
iii) Carbocation and carbanion [3]
b) Which one of but-1-ene and but-2-ene is more stable and why? [2]
3. a) Carry out the following conversions : [3]
i) acetylene \rightarrow acetone
ii) $\text{Me}_3\text{CBr} \rightarrow \text{Me}_3\text{C} - \text{CH}_2\text{CH}_2\text{CH}_3$
iii) Benzene \rightarrow acetophenone
b) Write down the mechanism of Friedel-Crafts alkylation. [2]
4. a) Relate the structures of each pair as enantiomers, diastereomers or identical compounds :



- b) Illustrate plane of symmetry with an example. [2]
5. a) Give mechanisms for following reactions :
i) $\text{CH}_3\text{CH}_3 + \text{Cl}_2 \xrightarrow{\text{heat}} \text{CH}_3\text{CH}_2\text{Cl} + \text{HCl}$
ii) $\text{CH}_3\text{CH} = \text{CH}_2 + \text{Br}_2 \xrightarrow{\text{CCl}_4} \text{CH}_3\underset{\text{Br}}{\text{CH}} - \text{CH}_2\text{Br}$ [3]

b) Identify A and B :



[1]

c) Write down the structure of an alkene which gives Me_2CO and EtCHO on ozonolysis.

[1]

Unit – II

Answer any two questions:

6. How can you detect the following ions? Write proper chemical reactions—

(i) phosphate, (ii) nickel

[2·5×2]

7. a) Three unlabelled bottles contain dilute hydrochloric acid, dilute nitric acid and dilute sulphuric acid separately. You are asked to label them. How will you do that? [4]

b) Which acid is used in the flame test and why? [1]

8. a) Write down the confirmative tests with chemical reactions for the following ions.

(i) NH_4^+ , (ii) S^{2-} , and (iii) Cr^{+3}

[3]

b) Write down the importance of common ion effect in the separation of Gr.IIIA cations.

[2]