91553

B.Sc. 2nd Semester New Scheme Examination,

May–2017

BIOTECHNOLOGY

Paper–BT–207

Organic Chemistry

Time allowed : 3 hours] *[Maximum marks : 40*

Note : *Attempt five questions in all, selecting one question from each section.* ***Question No. 1 is compulsory.***

1. (a) Why melting point of trans-But-2-ene is greater than cis-But-2-ene. 2

   (b) Dehydration of alcohols to form alkenes is carried out by heating with H_2SO_4 and not HNO_3 and HCl. Why ? 2

   (c) Define aromaticity and Huckel rule. 2

   (d) Distinguish between terminal and non-terminal alkynes. 2

Section–A

2. (a) Write short note on Hydroboration-oxidation of alkenes. 2

   (b) Which one have higher boiling point

   Cis-2-butene and trans-2-butene 2

(c) Convert

(i) Propene into propan-1-01

(ii) Ethene into methanol

(iii) Ethene into methanol

(iv) Ethene into Glycol 4

3. (a) Deduce the structure of alkene that an ozonolysis gives

(i) Only acetone

(ii) 2-methylpropanal and acetaldehyde. 4

(b) Complete the folloiwing

(i) $CH_3–CH_2CH=CH–CH_3 \xrightarrow[Zn/H_2O]{O_3} ?$

(ii) $CH_3CH=CH_2 + HI \xrightarrow{\text{Peroxide}} ?$ 2

(c) Why peroxide effect is not observed in case of HC*l*? 2

Section–B

4. (a) Draw energy profile diagram for electrophilic aromatic substitution. 2

(b) Explain mechanism of sulphonation of benzene. 3

(c) Define annulenes. Comment upon aromatic nature of [4] annulene and [10] annulene. 3

5. (a) What happens when

(i) benzene is treated with CH_3Cl in presence of $AlCl_3$

(ii) benzene is treated with Cl_2 in presence of $FeCl_3$ 2

(b) Define aromatic and non-aromatic compounds giving two examples of each. 4

(c) Comment upon aromatic nature of Cyclo-octatetraene and Cyclopentadiene. 2

Section–C

6. (a) Classify following as Isolated, conjugated or cumulated diene giving reason

(i) $CH_2=C=CH_2$

(ii) $CH_2=CH-CH=CH_2$

(iii) $CH_2=CH-CH_2-CH=CH_2$ 3

(b) What happens when acetylene is treated with

(i) Fehling solution

(ii) $CuCl/NH_4Cl$

(iii) Alk. $KMnO_4$ 3

(c) Why terminal alkynes are acidic in nature ? 2

7. (a) Which is more stable and why – Conjugated diene or isolated diene. 3

(b) Discuss mechanism of electrophilic addition in conjugated dienes. 3

(c) Convert acetylene into

(i) Acetaldehyde

(ii) Cyclo-octatetraene. 2

Section–D

8. (a) How can you Convert methyl bromide into dimethylether. What is the name of reaction ? 2

(b) Complete the following 2

(i) $CH_3–CH_2Br + I_2 \xrightarrow{\text{acetone}} ?$

(ii) $CH_3CH_2CH_2–Br \xrightarrow{\text{alc. KOH}} ?$

(c) What do you understand by SN^1 and SN^2 mechanism ? Illustrate your answer by considering hydrolysis of alkyl halides. 4

9. (a) Write

(i) Balz-schiemann Reaction

(ii) Swartz Reaction

(iii) Gattermann Reaction 6

(b) How can you Convert methyl bromide into ethane. What is the name of reaction ? 2