This question paper contains 4 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **1351**

Unique Paper Code : **6792011101**

Name of the Paper : **Basic Concepts of Biomolecules**

Name of the Course : **B.Sc. (H) Biological Sciences**

Semester : **I**

Duration : **2 Hours** Maximum Marks : **60**

Instructions to Candidates :

(Write your Roll No. on the top immediately on receipt of this question paper.)

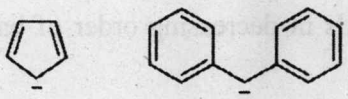
Attempt *four* questions out of six.

Question number **1** is compulsory.

All questions carry equal marks.

1. (*a*) Differentiate between relative and absolute configuration with suitable examples.

(*b*) Arrange the following in the increasing order of stability :



(i) (ii) (iii)

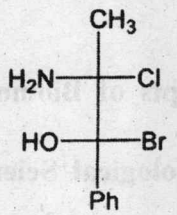
(*c*) Write a short note on Claisen condensation and give its biological significance.

(*d*) What is Invert Sugar and why it is so named ?

(*e*) What are drying and non-drying oils ? Give *one* example of each type. 3×5=15

P.T.O.

2. Carry out the following conversion in the compound (A) :



(A)

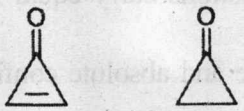
(*a*) Fisher to Sawhorse

(*b*) Fisher to staggered Newman

(*c*) Fisher to Eclipsed Newman. 5×3=15

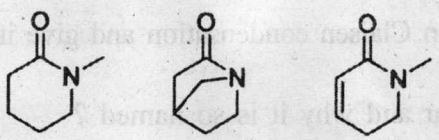
3. (*a*) Differentiate between Inductive effect and Electrometric effect with suitable example.

(*b*) Which of the following *two* compounds have higher dipole moment and why ?



(i) (ii)

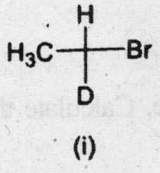
(*c*) Arrange the following compounds in decreasing order of basicity, give suitable reason for your answer : 5×3=15



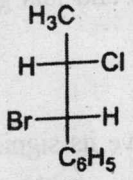
(i) (ii) (iii)

4. (*a*) Define chirality and stereogenic centre with suitable example.

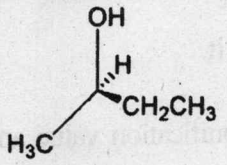
(*b*) Assign E/Z or R/S to the following compounds :



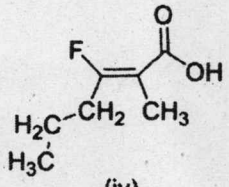
(i)



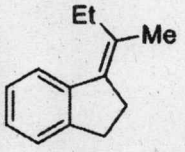
(ii)



(iii)



(iv)



(v)

(*c*) How can you differentiate between enantiomers and diastereomers ? Explain with suitable examples. 5×3=15

5. (*a*) Discuss the Chemistry involved in the following reactions (any *two*) :

(*i*) Retro aldol Reaction (Glycolysis)

(*ii*) Pinacole pinacolone rearrangement

(*iii*) Baeyer Villiger oxidation

(*iv*) Cannizzaro reaction (Sugar metabolism).

(*b*) Define disaccharides. Give the structure of Sucrose. How was the nature of linkage between its two monosaccharide units established ?

(*c*) What are reducing and non-reducing sugars ? Explain with the help of suitable structures and give *one* example for each category. 5×3=15

P.T.O.

6. (*a*) Draw Fischer projection of β-D (+) – glucose, convert it to Howarth structure and then to the chair conformation.

(*b*) Explain oxidative rancidity in oils and fats giving a suitable example. Suggest a method to prevent it.

(*c*) Define saponification value and give its significance. Calculate the saponification value of glyceryl tripalmitate ? 5×3=15