This question paper contains 3 printed pages. *Your Roll No. .....*

Sl. No. of Ques. Paper : 1769 **GC-3**

Unique Paper Code : **32581101**

Name of Paper : **Bio-organic Chemistry**

Name of Course : **B.Sc. (H) Biomedical Science (CBCS)**

Semester : I

Duration : : 3 hours

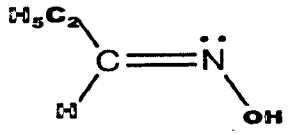
Maximum Marks : 75

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

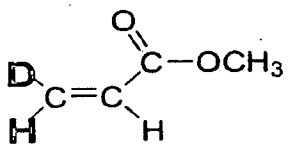
Attempt five questions in all. Question No. 1 is compulsory.
Give chemical structure and examples where necessary.

Q1. (a)Assigning priority order and assign E/Z configuration to each of the following compounds:

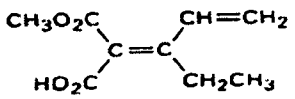
(i)



(ii)



(iii)

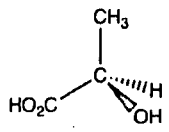


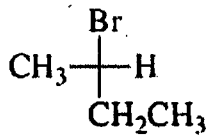
(b) Describe the intra- and inter molecular forces and their types with suitable examples.

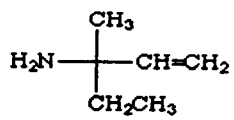
(c) What are skew conformations? Can all the skew conformations be termed as gauche conformations? (6,6,3)

2. (a) Assigning priority order and assign R/S configuration to each of the following compounds:

P. T. O.

(i) 

(ii) 

(iii) 

(b) Give atleast five reasons due to which water is called the universal solvent.

(c) Sucrose, a disaccharide is a non-reducing sugar while maltose (also a disaccharide) is a reducing sugar. Explain (6,5,4)

3. (a) Explain the different sugar derivatives with their suitable structures and significance.
(b) Derive the Henderson-Hasselbach equation for weak acid and write its significance.
(c) Depurination occurs in DNA structure in lowpH solution. How? (6,5,4)

4. (a) Differentiate between the following:

(i) Reducing and non-Reducing Sugars
(ii) Dipole-Dipole and Dipole- induced dipole force
(iii) Conformational isomers and Geometrical isomers

(b) Aspirin (acetylsalicylic acid) has a pKa of 3.5. (i) Calculate the ratio of ionized/unionized of the drug in the stomach where pH is 1. (ii) Calculate the ratio of ionized/unionized in the intestine where pH is 6.

(c) Define the following:
(i) Specific rotation
(ii) Isoelectric point
(iii) Fatty acids
(iv) Optical activity (6,5,4)

5. (a) Write the short notes on the following (**any three**):
   (i) Glycogen
   (ii) Cholesterol
   (iii) Alpha helix
   (iv) Bronsted Lowry acid-base concept

   (b) Give structure of the following:
   (i) Tryptophan
   (ii) cGMP
   (iii) Palmitic acid
   (iv) Fructose

   (c) Monoamino monocarboxylic acids exist in aquous solution as dipolar molecule. Explain. (9,4,2)

6. (a) Give reasons:
   (i) Arginine and histidine are semi-essential amino acids.
   (ii) Starch gives a blue color with iodine.
   (iii) In assigning R and S configuration placing a least priority group vertically downward in a Fischer projection.
   (iv) Double helical DNA structure absorbs less UV light than single stranded DNA.

   (b) Explain Ramachandran plot with suitable example.
   (c) Briefly discuss the physical and chemical properties of enantiomers. (2×4=8,4,3)