

This question paper contains 4+2 printed pages]

Roll No.

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

S. No. of Question Paper : 802

Unique Paper Code : 217251

E

Name of the Paper : Chemistry-II (CHCT-402)

Name of the Course : B.Sc. (Hons.) Biochemistry/Botany/Zoology/BMS

Semester : II

Duration : 3 Hours

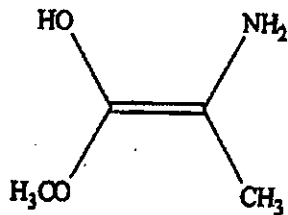
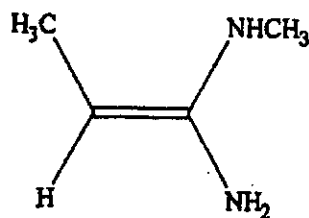
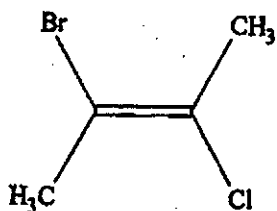
Maximum Marks : 75

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

Attempt any five questions.

All questions carry equal marks.

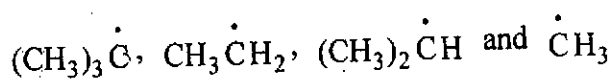
1. (a) Assigning priority order, explain how will you designate E-/Z- in the following : 6



P.T.O.

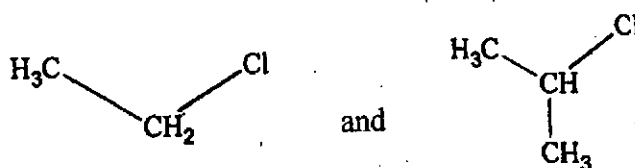
(b) Draw different conformations of cyclohexane. Arrange them in increasing order of stability, with explanation. 5

(c) Arrange the following free radicals in decreasing order of stability and explain your answer : 4



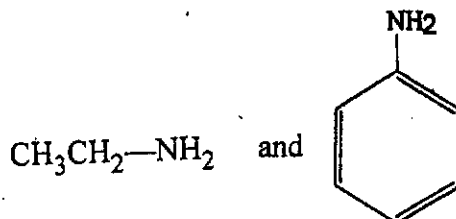
2. From the following attempt any five :

(a) Giving explanation indicate which of the following carbon-chlorine bond (shown below as thick line) will undergo heterolytic cleavage much faster ? 3



(b) Out of $\text{CH}_3\text{CH}_2\text{OH}$ and CH_3OCH_3 , which one has higher boiling point and why ? 3

(c) Which of the following is more basic and why ? 3

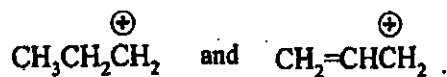


(d) Out of *ortho*-nitrophenol and *para*-nitrophenol, which one is more volatile and why ? 3

(e) What will be the increasing order of acidic strength of the following carboxylic acids ? Explain. 3

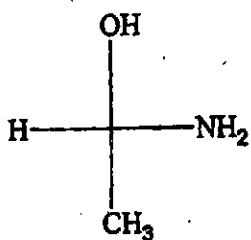


(f) Which of the cation is more stable and why ? 3

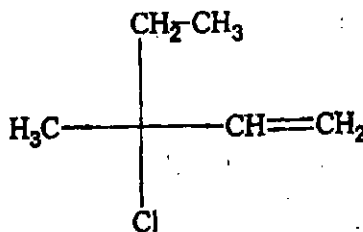


3. (a) What are *meso*-structures ? Comment on the optical activity of *meso*-structures. 3

(b) Assigning priority order, explain how will you arrive at R-/S- configuration of the following : 5



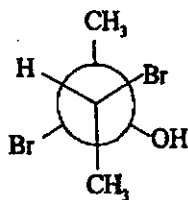
(i)



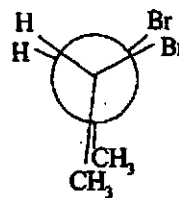
(ii)

(c) Convert the following Newman projections into Fischer projection :

4



(i)



(ii)

- (d) Draw most stable and the least stable conformation of *n*-butane with reasons. 3
4. (a) Using Gabriel phthalimide synthesis, how will you prepare glycine ? 4
- (b) What are N-terminal and C-terminal of polypeptide ? Write the synthesis of a dipeptide of your choice using appropriate protecting groups. 6
- (c) Define the terms 'Zwitterion' and 'Isoelectric point'. How electrophoresis is used in the separation of amino acids ? 5
5. (a) How will you establish the open chain structure of glucose (*configuration not required.*) 4
- (b) Carry out the following conversions : 4,4
- (i) D-glucose to D-fructose
- (ii) D-arabinose to D-glucose.
- (c) Explain, why glucose and fructose give same osazone derivative ? 3

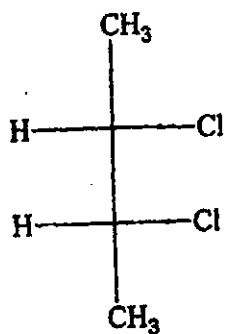
6. Write short notes on any *three* of the following :

- (i) Mutarotation
- (ii) Ruff's degradation in carbohydrates
- (iii) Primary, secondary and tertiary structure of proteins
- (iv) Merrifield solid phase peptide synthesis
- (v) Ninhydrin test and its reaction for deduction of amino acids.

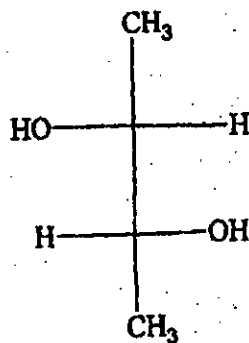
7. From the following attempt any *five* :

- (a) Indicate which of the following stereoisomer is designated as '*threo*' and which as '*erythro*' and why ?

3



(i)



(ii)

- (b) Explain, which of the following has stronger carbon-carbon bond ? 3



- (c) Define the terms Enantiomers, Diastereomers giving suitable examples. 3
- (d) What do you mean by hyperconjugation ? Explain giving an example. 3
- (e) Draw the Haworth projection formula for α -D (+)-glucopyranose and β -D (-) fructofuranose. 3
- (f) Give the full name for 'DCC and *t*-Boc'. 3
- (g) Define essential and non-essential amino acids, with examples. 3