

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 1611

C

Roll No.....

Unique Paper Code : 217251

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

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

Semester : II

Duration : 3 Hours

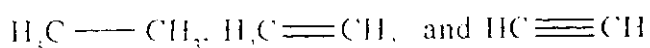
Maximum Marks : 75

Instructions for Candidates

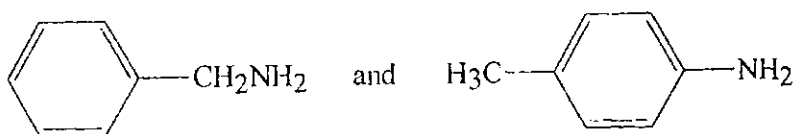
1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **FIVE** questions.
3. All questions carry equal marks.

1. From the following attempt any **FIVE** :

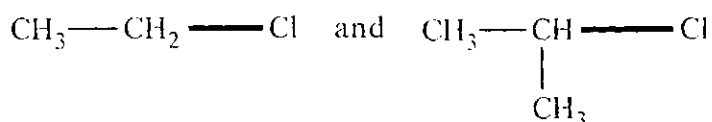
- (a) Giving explanation, arrange the following in increasing order of C—C bond strength :



- (b) Which of the following is more basic and why ?

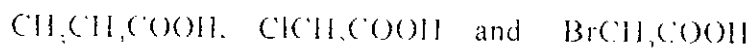


- (c) Explain which of the following will undergo heterolytic cleavage of *Carbon-chlorine* bond (shown below as thick line) much faster ?

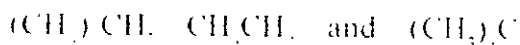


• P.T.O.

(d) Explain the increasing order of acidic strength of the following :

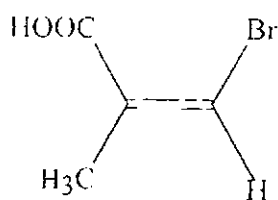
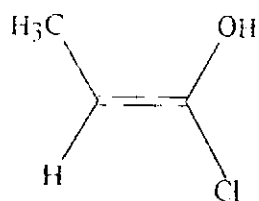


(e) Giving reasons, arrange the following in increasing order of stability



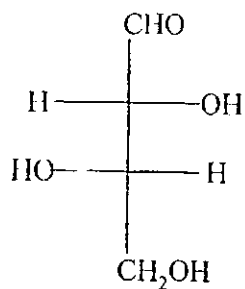
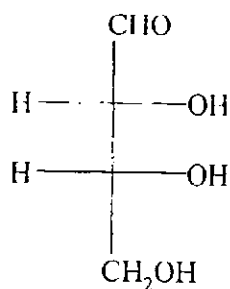
(f) Out of *ortho*-nitrophenol and *para*-nitrophenol which one is more volatile and why ? (3×5)

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



(4)

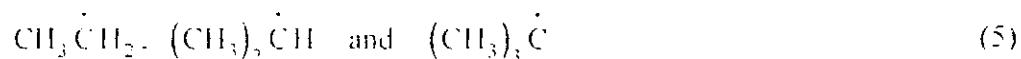
(b) Indicate which of the following stereoisomer designated as *threo* and which as *erythro* and why ?



(2)

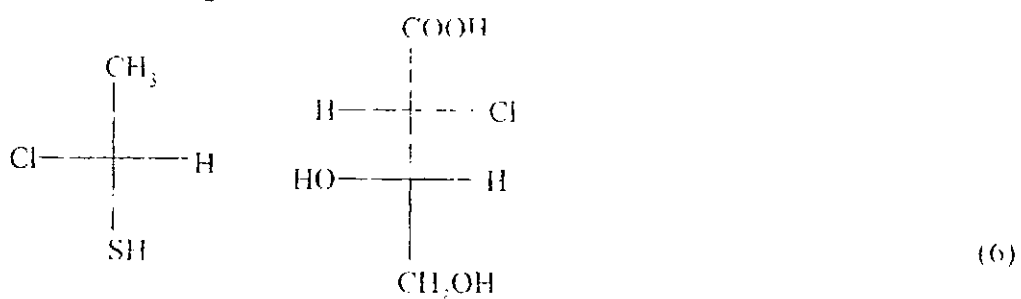
(c) Draw different conformations of cyclohexane and arrange them in their decreasing order of stability, giving suitable explanation. (4)

- (d) Arrange the following free radicals in decreasing order of stability and explain your answer on the basis of hyperconjugation.

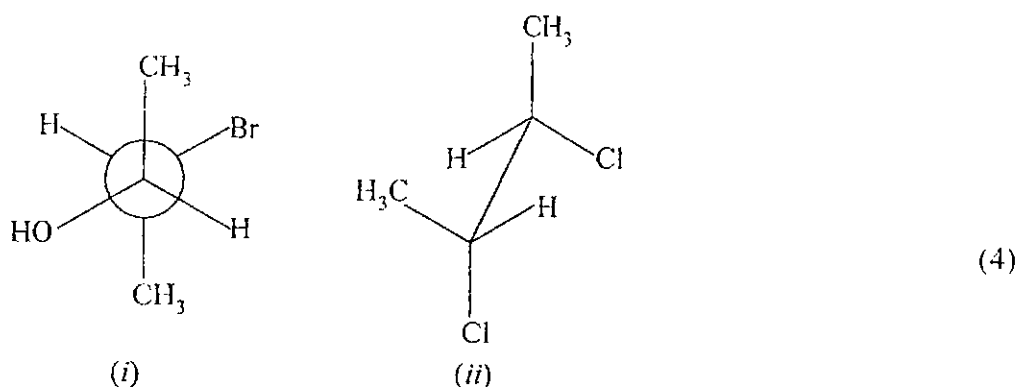


3. (a) Draw the Fischer projection for all possible stereoisomers of 2,3-dihydroxybutane. What is the correlation among these stereoisomers? Comment on optical activity of these stereoisomers. (5)

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



- (c) Explaining the steps involved how will you convert the following into Fischer projection :



4. (a) What are essential and non-essential amino acids? Give two examples of each. (3)

- (b) Give the preparation of Glycine using Gabriel phthalimide synthesis. (3)

- (c) Explain Edman degradation in determining end group analysis in peptides. (3)
- (d) Give the synthesis of dipeptide Gly-Val from Glycine and Valine using Merrifield solid phase peptide synthesis. (6)
5. (a) Carry out the following conversions :
- (i) D-glucose to D- fructose
 - (ii) D-arabinose to D-glucose (3.3)
- (b) How will you establish the open chain structure of glucose (configuration not required). (6)
- (c) Draw the Haworth projection formula for
- (i) β -D(-)-glucopyranose
 - (ii) α -D(-)-fructofuranose (2)
- (d) Name the monosaccharides obtained on hydrolysis of sucrose. (1)
6. Write a short note on any **THREE** of the following :
- (i) Mutarotation
 - (ii) Electrophoresis for separation of amino acids
 - (iii) Primary, secondary and tertiary structure of proteins
 - (iv) Ruff's degradation in carbohydrates (5,5,5)