

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: IMSC
BRANCH: CHEMISTRY

SEMESTER : V
SESSION : MO/2022

SUBJECT: CH302 ORGANIC CHEMISTRY-IV

TIME: 3:00 Hours

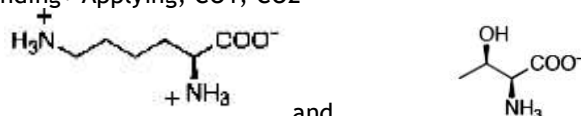
FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) How does the structure of RNA differ from that of DNA? Remembering + Understanding; CO3 [2]
Q.1(b) How are the nitrogen bases of nucleic acid connected with the back bone and how are they connected with each other? Understanding + Applying; CO3, CO4 [3]
Q.1(c) Outline the synthetic routes of any one of nucleotides. Give the details mechanism for each step. Remembering + Understanding+ Applying, CO1, CO2 [5]

- Q.2(a) Why isn't protecting amine group as a simple amide a good idea in peptide synthesis? Understanding + Analyzing, CO2 [2]
Q.2(b) Give D/L nomenclature and R/S nomenclature of all chiral centre(s) for following amino acids. Remembering + Understanding+ Applying, CO1, CO2 [3]



- Q.2(c) What is meant by a term anti-parallel β -sheets in the secondary structure of peptides? What makes the structure stable? Understanding + Analyzing, CO2 [5]
- Q.3(a) Discuss about the energy profile of enzyme activity for any arbitrary process. Remembering + Applying, CO3 [2]
Q.3(b) Explain the selectivity difference of chymotrypsin, trypsin and elastase towards peptide bond breaking. Remembering + Understanding + Applying, CO3, CO4 [3]
Q.3(c) Explain the different theories proposed for mechanism of enzyme substrate complex formation. Remembering + Applying, CO2 [5]
- Q.4(a) What are differences between saturated fat and unsaturated fat in terms of structure and properties? Remembering + Understanding, CO2 [2]
Q.4(b) Discuss the factors leading to the rancidity and reversion. Understanding + Analyzing, CO3 [3]
Q.4(c) Write short note on auto-oxidation of food. Comment on the prevention of auto-oxidation. Remembering + Understanding + Applying, CO3, CO4 [5]
- Q.5(a) What is anti-inflammatory? Understanding + Analyzing, CO1 [2]
Q.5(b) Explain the preparation of paracetamol from phenol. Give the mechanism. Remembering + Understanding+ Applying, CO1, CO2 [3]
Q.5(c) Outline the steps of Ibuprofen synthesis with mechanism. Remembering + Applying, CO2, CO3 [5]

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