

THEORY EXAMINATION –JULY 2021	
B.TECH - Biotechnology	SEMESTER - IV

TIME – 4 Hrs.

M.M. - 75

PAPER - BS-202

SUBJECT- Basics of thermodynamics and organic chemistry

INSTRUCTIONS TO BE FOLLOWED

- The candidates will be required to attempt All questions in Part-A and Part-B (Compulsory Sections). Attempt any four questions from Part-C selecting at least one from each unit.
- Allotted time for examination is 4 hours that includes time for downloading the question paper, writing answers, scanning of answer sheets and uploading the sheets on the Attendance Sheet Cum Answer Sheet Uploading google form.
- The PDF files should be saved as Roll No. and Subject Code.
- Maximum Page Limit should be 36 (Thirty Six) for attempting the question paper on A4 sheets which could be downloaded and printed from the sample sheets given in the UIET Website.
- Over-attemptation should be avoided.
- Handwriting should be neat and clean and diagrams should be clear and contrasted.
- The candidate should not write their Mobile No. otherwise Unfair Means Case will be made.
- While attempting the paper, the candidate will use blue/black pen only.
- Before attempting the paper, the candidate will ensure that he/she has downloaded the correct question paper. No complaint for attempting wrong question paper by the candidate will be entertained.
- Candidate must ensure that he/she has put his/her signature on each page of the answer sheet used by him/her. Answer sheet without the signature of the candidate will not be evaluated.
- Attempt parts A, B & C separately. Do not inter-mix them. Write neatly & mention the question number clearly.

PART-A (15 Marks)

Q. No. – 1 Answer the following questions.

15 X 1=15

(i)	Define locant with an example
(ii)	Classify different types of carbon atoms with example
(iii)	One litre of 1M sodium chloride solution will contain how much of NaCl.
(iv)	Define peroxide effect
(v)	Classify different types of stereoisomers
(vi)	What does 'L' and 'l' represents in stereo compounds
(vii)	Give an example of intramolecular H-bonding
(viii)	What do you mean by diad type of tautomerism, give an example
(ix)	Why thermodynamic properties are called macroscopic properties ?
(x)	Write the units in which we express enthalpy in SI system
(xi)	Write down the expression for reversible work of expansion
(xii)	What is the state of reaction when $\Delta G = 0$
(xiii)	What do you mean by steady state of system
(xiv)	Expression for law of equilibrium for the reaction $aA + bB \leftrightarrow lL + mM$ will be ?
(xv)	What are the modes in which energy can be exchanged between system and surroundings

PART-B (20 Marks)

UNIT-I		
2	What is rearrangement reaction, explain with respect to Wanger Meerwein reaction	5
UNIT-II		
3	How Aldol condensation is important in chemistry	5
UNIT-III		
4	Derive the mathematical formulation of first law of thermodynamics. Why this law is called as backbone of thermodynamics	5
UNIT-IV		
5	Solvent extraction is an important analytical tool, justify	5

PART-C (40 Marks)

UNIT-I		
6	With an example in each rule write down the different rules for IUPAC nomenclature of Aliphatic compounds	10
7	Write short notes on elimination reactions and the concept of hyperconjugation	10
UNIT-II		
8	(i)What are geometrical isomers. How E and Z system of nomenclature works in these isomers (ii) Write a note on mesomers with proper examples	6+4

9	In detail write on nature, type, stability and importance of H-bonding	10
UNIT-III		
10	a) Where from the concept of entropy originated. How does it varies with pressure and Temperature b) Justify the statement that work done in reversible process is the maximum work done.	6+4
11	Give the derivations of following: Kirchoff's equation and Heat capacities	5+5
UNIT-IV		
12	Write in detail on cooperative and non cooperative binding in terms of their biological significance	10
13	In short write on (a) Chemical potential (b) Gibb's-Duhem equation (c) Free energy	4+4 +2