Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011) University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no.....

Name of the Program and semester: B. Pharm II Semester
Name of the Course: Biochemistry
Course Code: BP203T
Time: 3-hour

Maximum Marks: 75

Note:
(i) This question paper contains three sections
(ii) All the sections are compulsory
(iii) All questions should cover COs of the course as per syllabus coverage.

Section-A

MULTIPLE CHOICE QUESTION **20 X 1 = 20 MARKS**

S.NO.	QUESTIONS	CO's
1.	What is Mutarotation? a. Change in isomers b. Change in Optical activity c. Change in specific Optical Rotation d. Change in mirror images	CO-1
2.	Which one of the following is not a Pyrimidine Base? a. Uracil b. Guanine c. Orotate d. Thymine	
3.	Which one of the following contains more than two polypeptide chain? a. Quaternary Protein b. Primary Protein c. Tertiary Protein d. Secondary Protein	
4.	Which one of the following is Low energy compounds? a. ADP b. Pyrophosphate c. Acetyl CoA d. cAMP	
5.	Out of the following pathways which one is not an Oxidative Pathways? a. Glycolysis b. HMP Shunt Pathways c. Glycogenesis d. Uronic Acid Pathways	CO-2
6.	In ETC, complex-I is also called_____ a. NADH dehydrogenase b. Succinate dehydrogenase c. Cytochrome bc1 Complex d. Cytochrome oxidase	

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7.	a. Which one of the following enzymes regulates TCA cycle? b. Pyruvate Kinase c. Citrate Synthase d. Hexokinase e. Lactate Dehydrogenase	
8.	ΔG° is defined as the _____ a. Residual energy present in the reactants at equilibrium b. Residual energy present in the products at equilibrium c. Difference in Residual Energy of reactants and products d. Energy required for converting 1 mole of reactant to 1 mole of product	
9.	How many ATP are generated by 1 mole of Palmitic acid by β- oxidation? a. 150 b. 129 c. 121 d. 124	CO-3
10.	What are the two final products obtained in β- oxidation of odd chain fatty acid? a. Acetyl CoA & Malonyl CoA b. Acetyl CoA & Acetyl CoA c. Acetyl CoA & Propionyl CoA d. Acetyl CoA & Succinyl CoA	
11.	Which one of the following is not synthesized from Cholesterol? a. Ketone Bodies b. Bile Acids c. Steroid Hormones d. Vitamin D	
12.	All transaminase reaction requires which coenzyme? a. PLP b. NAD+ c. FAD d. TPP	
13.	Which enzyme performs proof reading activity? a. DNA Polymerase I b. DNA Polymerase II c. DNA Polymerase III d. DNA Polymerase IV	CO-4
14.	The enzyme responsible for removal of supercoiling in replicating DNA_____ a. Topoisomerase b. DNA Polymerase c. Primase d. Helicase	
15.	Which one of the following is true about RNA synthesis? a. Synthesis occurs only in 5′ to 3′ direction b. RNA polymerase requires a primer for initiating transcription c. "U" is inserted opposite "T" in transcription d. New nucleotides are added on the -OH of the ribose sugar	

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16.	Where does RNA polymerase bind DNA? a. Promoter b. Operator c. Enhancer d. Holoenzyme	
17.	Which one of the following is non-protein part of enzyme? a. Apo-enzyme b. Co-enzyme c. Holo-enzyme d. Iso-enzyme	CO-5
18.	Co-carboxylase is _____ a. Thiamine pyrophosphate b. Pyridoxal Phosphate c. Biotin d. CoA	
19.	An inducer is absent in which type of enzyme? a. Allosteric b. Constitutive c. Co-operative d. Isoenzymic	
20.	Where does inhibitor bind on enzyme in mixed inhibition? a. At active site b. Allosteric site c. At inactive site d. Binds on substrate	

Section B

Short Questions: Attempt any seven questions. **7x5 = 35 marks**

S.No.	QUESTIONS	CO's
1.	What are amino acids and explain their chemical nature with examples along with biological significance?	CO-1
2.	Define concept of free energy, enthalpy and entropy and state the relationship between them.	CO-1
3.	What is Citric acid cycle, explain along with its pathway, energetics and significance?	CO-2
4.	Explain diagrammatically about ETC, its mechanism along with its inhibitors.	CO-2
5.	What is Urea cycle and explain its pathway?	CO-3
6.	Define De novo synthesis of Palmitic acid and provide the reactions involved in flow chart form.	CO-3
7.	Explain the DNA replication process in Prokaryotes.	CO-4
8.	What is Transcription and explain the stages involves in it.	CO-4
9.	Write down the therapeutic and diagnostic applications of enzymes and isoenzymes.	CO-5

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Section C

Long questions: Attempt any two questions **2x10 = 20 marks**

S.No.	QUESTIONS	CO's
1.	What are enzymes, explain along with its properties, nomenclature and IUB classification?	CO-5
2	What do you mean by β- Oxidation of Saturated Fatty acid and write down the stages involved in β- Oxidation of Palmitic Acid?	CO-3
3	Explain the classification, chemical nature and biological role of Carbohydrates.	CO-1