Roll No: _____

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MSc Biochemistry, Semester III Examination, 2023

Paper Code: MBC 303

Paper Title: Lipid, Amino Acid and Xenobiotic Metabolism

Time: **2½ h** Max Marks: 60

Note: *This paper has 3 Sections, A, B, and C. Attempt all three sections. Section A: Answer all the questions; Section B: Answer any one; Section C: Answer all the questions, each question in this section has an internal choice*

Course/Program Learning Outcomes (CLO/PLO) and Blooms Taxonomy Levels (BTL):

CLO-1: Understand concepts
CLO-2: Systematically learn the processes
CLO-3: Gain knowledge of mechanism
CLO-4: Comprehend how things are integrated
CLO-5: Analyze and evaluate processes

SECTION A

Attempt All Questions

(1x10=10 Marks)

Q. No. 1	OBJECTIVE QUESTIONS	BTL	CLO	PLO
(a)	i) Apoproteins associated with LDL (Low-Density Lipoproteins) is	2	2	3
	ii) Anti-cholesterol drug STATINS targets which enzyme of Cholesterol biosynthesis.....	2	2	3
	iii) Odd chain fatty acid can be synthesized by incorporation of ..... in FAS	4	5	2
	iv) Which metabolite would be absent from plant exposed to glyphosate (Options: Chorismate, Tryptophan, Phenylalanine, All the above)	4	4	3
	v) One of the amino group in urea is always contributed by	3	3	2

	vi) The Precursor for CTP biosynthesis is..... (Options: dUDP, GMP, UTP, TTP)	3	4	3
	vii) FdUMP used in cancer treatment is an inhibitor of.....	4	4	3
	(viii) Severe Combined Immunodeficiency Disease is due to mutation in.....	4	4	3
	(ix) Futile step during biological nitrogen fixation (Options: Consumption of electrons/ Production of Hydrogen/ Production of Ammonia/ Consumption of protons)	2	2	3
	(x) Non-photosynthetic rhodopsin photo phosphorylation is used for.....	2	2	3

SECTION B

Attempt Any Two Questions

(2x12½ =25 Marks)

Q. No. 2	LONG ANSWER TYPE QUESTIONS	BTL	CLO	PLO
a)	Discuss the signaling events that take place during the mobilization of fatty acids from adipose tissue and also provide a detailed account of oxidation of the **SATURATED** fatty acids in the liver.	3	2	3
b)	Give a detailed account of Heme metabolism.	5	3	2
c)	Discuss salient features of thymidylate biosynthesis. Why does it offer an attractive target for chemotherapy and parasite therapy?	2	2	3
d)	Discuss in detail the features and relevance of Methanogenesis.	1	1	2

SECTION C

Attempt All Questions

(5x5 =25 Marks)

Q. No. 3	SHORT ANSWER TYPE QUESTIONS	BTL	CLO	PLO
a)	Briefly discuss the exogenous transport of Lipids **OR** Briefly discuss Ketone body catabolism and why they are considered as water-soluble equivalent of fatty acids	4	5	3
b)	Briefly describe the process of intestinal absorption of amino acids	3	2	3

	OR Discuss the role of Tetrahydrofolate Cofactors in one-carbon metabolism			
c)	Differentiate between the salvage pathways of Purines and Pyrimidines biosynthesis. **OR** Discuss the functioning of Ribonucleotide Reductase	4	3	2
d)	Discuss Reductive Acetyl CoA pathway of carbon fixation in prokaryotes **OR** Discuss the salient features of Rhodopsin Phototrophy	2	2	3
e)	Discuss the mechanistic understanding of Severe Combined Immunodeficiency disease **OR** What are Porphyria's? Discuss in detail	4	2	3

END OF THE QUESTION PAPER