LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **BIOTECHNOLOGY**

FIRST SEMESTER – **APRIL 2023**

PBT1MC02 – BIOMOLECULES AND METABOLISM

Date: 02-05-2023 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

	SECTION A		
Answer ALL the questions			
1	Choose the best option (5 x 1 = 5)		
a)	The first step of β-oxidation involves the activation of fatty acid in the presence of Ca^{++} and thiokinase b) ATP and thiokinase c) ATP and β-ketoacyl thiolase d) ATP and Aldehyde dehydrogenase	K1	CO1
b)	High energy compounds are those that yields Free energy equal to that of ATP (ΔG = - 7.3 Kcal) Free energy equal to or greater than that of ATP (ΔG = - 7.3 Kcal) Free energy equal to that of ATP (ΔG = + 7.3 Kcal) Free energy equal to or greater than that of ATP (ΔG = + 7.3 Kcal)	K1	CO1
c)	The product obtained when a molecule of carbon dioxide is removed from an amino acid a) Ketone b) Aldehyde c) Amine d) Ester	K1	CO1
d)	Heme disorder is referred as Anemia b) Porphyria c) Thrombocytopenia d) Leukemia	K1	CO1
e)	Vitamin 'H' is also known as Tocopherol b) Phylloquinone c) Biotin d) Nicotinic acid	K1	CO1
2	Answer in one or two sentences (5 x 1 = 5)		
a)	Name the cell structure associated with gangliosides and write its's role.	K2	CO1
b)	State the function of NADH dehydrogenase.	K2	CO1
c)	Differentiate: amino acid and amine.	K2	CO1
d)	What is thrombocytopenia?	K2	CO1
e)	Indicate the importance of vitamin B6.	K2	CO1
	SECTION B		
	Answer any THREE of the following in 500 words (3 x 10 = 30)		
3	Illustrate about Cholesterol and their significance.	K3	CO2
4	Compare and contrast: ETC in mitochondria and chloroplast.	K3	CO2
5	Explain urea cycle and its importance.	K3	CO2
6	Mention inborn errors of metabolism and discuss in detail on any two of them.	K3	CO2
7	Compile an essay on micronutrients of vitamins and minerals.	K3	CO2

	SECTION C		
Answer any TWO of the following in 500 words (2 x 12.5 = 25)			
8	Classify compound lipids and state their functions.	K4	CO3
9	Infer the similarities and differences between cyclic and non cyclic photo phosphorylation. Describe pyruvate metabolism and its enzyme activities.	K4	CO3
10	Illustrate the role of insulin in glucose metabolism and infer their dependence in causing high blood sugar levels. Demonstrate an assay to diagnose blood sugar levels in human body and its interpretation.	K4	CO3
11	Compile an essay on vitamins and its disorders.	K4	CO3
SECTION D			
Answer any ONE of the following in 1000 words (1 x 15 = 15)			
12	Describe the functions and applications of proteins	K5	CO4
13	Demonstrate an assay to calculate the rate of respiration *in vitro* using isolated mitochondria with the help of DCPIP as electron acceptor.	K5	CO4
SECTION E			
Answer any ONE of the following in 1000 words (1 x 20 = 20)			
14	Reframe an essay on the role of pyruvate enzyme and citrate metabolism in control of gluconeogenesis	K6	CO5
15	Compile an essay on different types of disorder on lipid metabolism in detail.	K6	CO5

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