

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034****M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY****FIRST SEMESTER – NOVEMBER 2022****PBT1MC02 – BIOMOLECULES AND METABOLISM**

Date: 25-11-2022

Dept. No.

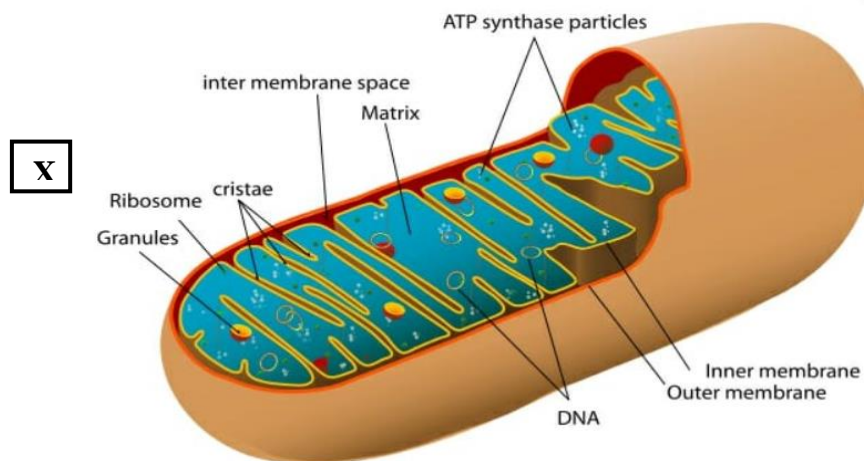
Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

SECTION - A**Answer ALL the Questions**

1	Choose the best option	(5 x 1 = 5)	
a)	Fat hydrolysis is accelerated by the presence of a) Mg ⁺⁺ b) Ca ⁺⁺ c) Na ⁺⁺ d) Fe ⁺⁺	K1	CO1
b)	Identify the terminal electron acceptor in respiration a) NADP ⁺ b) NAD ⁺ c) O ₂ d) FAD ⁺	K1	CO1
c)	In energy transfer process from ADP to ATP, donor of phosphate is a) Inorganic phosphate b) ADP c) Glucose phosphate d) ATP	K1	CO1
d)	Lower levels of blood platelet count is referred as a) Thrombocytosis b) Thrombocytopenia c) Thrombocythemia d) Polycythemia	K1	CO1
e)	Hormone responsible for “fight-or-flight” response a) Thyroxine and melatonin b) insulin and glucagon c) epinephrine and nor epinephrine d) estrogen and progesterone	K1	CO1
2	Answer in one or two sentences	(5 x 1 = 5)	
a)	State: PUFA and MUFA	K2	CO1
b)	List the function of RUBISCO	K2	CO1
c)	Differentiate: Enzyme and Catalyst	K2	CO1
d)	List any three disorders of lipid metabolism	K2	CO1
e)	Discuss the role of oxytocin and vasopressin	K2	CO1
SECTION - B			
Answer any THREE of the following in 500 words			(3 x 10 = 30)
3	Classify polysaccharides and its types	K3	CO2

4



a) Identify the part labelled X, the site of electron carriers in the figure and explain their role in biological oxidation (5).

b) Complete the following table with respect to the role of different parts of mitochondria (5):

Part of mitochondria	Role and Significance
Double membrane envelope	
Folding of cristae	
Ribosomes	
DNA	
Mitochondrial matrix	

K3 CO2

5 Prioritize the important biochemical functions of phenyl alanine

K3 CO2

6 Analyse and interpret about the disorders associated with the defective metabolism of any aminoacid in human body.

K3 CO2

7 Correlate and Explain: Nutrition and food assimilation

K3 CO2

SECTION - C

Answer any TWO of the following in 500 words

(2 x 12.5 = 25)

8 Summarise: Fatty acid types and their functions.

K4 CO3

9 a) Chemiosmotic theory explains ATP production. Discuss (7.5).

b) Describe the mechanism of transamination, deamination (5)

K4 CO3

10 a) Illustrate the biochemical mechanism in causing glycogen storage disorder (4)
b) Describe the symptoms and correlate it with the associated conditions in glycogen storage disorder (4.5)

K4 CO3

c) Explain about galactosemia and its associated symptoms (4).

11	Differentiate: macronutrients and micronutrients	K4	CO3
SECTION - D			
Answer any ONE of the following in 1000 words		(1 x 15 = 15)	
12	Sketch and explain the mechanism of protein synthesis	K5	CO4
13	a) Construct a flow diagram of light dependent reactions of photosynthesis (5) b) Summarise the mechanism of light reactions of photosynthesis in detail (10)	K5	CO4
SECTION - E			
Answer any ONE of the following in 1000 words		(1 x 20 = 20)	
14	Describe in detail EM Pathway along with its energetics and regulation.	K6	CO5
15	<i>Diabetes mellitus</i> is one of the major disorders of glucose metabolism. <ol style="list-style-type: none"> List the major symptoms and metabolic conditions associated with <i>Diabetes mellitus</i> (4) Compare and contrast: Type I and Type II diabetes (5) Demonstrate the procedure to perform GTT to test for <i>Diabetes mellitus</i> in humans. State the precautions to be taken and how do you interpret the results (8) Evaluate the use of glycosylated haemoglobin (HbA1C) over GTT (3). 	K6	CO5

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