

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION DECEMBER 2023
(First Semester)

Branch: BIOTECHNOLOGY

METABOLIC REGULATION

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Question No.	Question	K Level	CO
1	The rate of breakdown of metabolites is termed as _____. a) Metabolic state b) Metabolism c) Steady state d) Homeostasis	K1	CO1
2	Glucose level can be controlled by _____. a) insulin b) glucagon c) both insulin and glucagon d) epinephrine	K2	CO1
3	Glycolysis is termed as _____. a) EMP pathway b) HMP shunt c) TCA cycle d) glucose regulatory process	K1	CO1
4	Gluconeogenesis is ----- a) synthesis of glucose from noncarbohydrate b) synthesis of glucose from carbohydrate c) synthesis of glycogen from noncarbohydrate d) synthesis of glycogen from noncarbohydrate	K2	CO1
5	Nucleotides are a) Purine bases b) Nitrogen bases+ Pentose Sugar c) Nitrogen bases + Pentose sugar + Phosphate d) None of the above	K1	CO1
6	Which of the following is not the precursor for the de novo purine biosynthesis? a) Aspartic Acid b) Glycine c) Glutamine d) Arginine	K2	CO1
7	Free fatty acids in the plasma _____. a) Circulate in the unbound state b) Bind to lipoproteins and circulate c) Bind to albumin and circulate d) Bind to a fatty acid-binding protein and circulate	K1	CO1
8	Identify the key regulators of the ketogenic pathway? a) Acyl CoA/CoA ratio b) NADH/NAD ratio c) Insulin/Glucagon ratio d) All of the above	K2	CO1
9	Which of the following samples is usually taken for the liver function test? a) Blood sample b) Urine sample c) Intestine Biopsy sample d) Sputum sample	K1	CO1
10	Which of the following enzyme is a sensitive marker of alcoholic liver disease? a) Alanine transaminase b) Aspartate transaminase c) Gamma-Glutamyltransferase d) Alkaline phosphatase	K2	CO1

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Question No.	Question	K Level	CO
11.a.	Illustrate ATP hydrolysis and identify its role in energy metabolism.	K3	CO1
	(OR)		
11.b.	Examine role of insulin in metabolic regulation.		
12.a.	Enlist enzymes involved in regulation of TCA cycle and their application.	K3	CO1
	(OR)		
12.b.	Explain glycogen metabolism and its utility.		
13.a.	Explain transamination.	K4	CO1
	(OR)		
13.b.	Outline nucleic acid metabolism.		
14.a.	Explain lipogenesis of palmitic acid.	K5	CO4
	(OR)		
14.b.	Explain regulation of cholesterol metabolism.		
15.a.	Discuss role of ethanol in energy metabolism in liver.	K5	CO5
	(OR)		
15.b.	Construct metabolic profiles of kidney.		

SECTION -C (30 Marks)

Answer ANY THREE questions.

ALL questions carry EQUAL Marks (3 × 10 = 30)

Question No.	Question	K Level	CO
16	Analyse the importance cyclic AMP dependent protein kinase.	K4	CO1
17	Illustrate TCA cycle.	K4	CO2
18	Choose proteolysis and proteasome system.	K4	CO3
19	Explain oxidation of fattyacids.	K5	CO4
20	Explain liver and muscle metabolic adaptation in prolonged starvation.	K5	CO5

Z-Z-Z

END