

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MSc DEGREE EXAMINATION DECEMBER 2023
(First Semester)

Branch - APPLIED MICROBIOLOGY

MICROBIAL BIOCHEMISTRY AND PHYSIOLOGY

Time: Three Hours

Maximum: 75 Marks

SECTION-A (10 Marks)

Answer ALL questions

ALL questions carry EQUAL marks

(10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The average size of cells during exponential phase of growth is _____ a) Greater than the lag phase b) Lesser than the lag phase c) Equal to lag phase d) Constant	K1	CO1
	2	Which of the following has a spiral metabolic pathway? a) Glycolysis b) Citric acid cycle c) Glyoxylate cycle d) Fatty acid biosynthesis	K2	CO1
2	3	What is the final product of the C4 cycle? a) Aspartate b) Malate c) Oxalate d) Acetate	K1	CO2
	4	Which one out of the following enzymes acts in the pentose phosphate pathway? a) Aldolase b) Glycogen phosphorylase c) Pyruvate kinase d) 6-phosphogluconate dehydrogenase	K2	CO2
3	5	The rate determining step of Michaelis-Menten kinetics is _____ a) The complex dissociation step to produce products b) The complex formation step c) The product formation step d) None of the mentioned	K1	CO3
	6	Which of the following is not an extreme environment where extremophiles are found? a Polar ice caps b Volcanoes c Salt flats d Temperate forests	K2	CO3
4	7	Which of the following Biomolecules simply refers to as "Staff of life"? a Lipids b Proteins c Vitamins d Carbohydrates	K1	CO4
	8	What is the average molecular weight of an amino acid residue in a protein? a 120 b 110 c 130 d 140	K2	CO4
5	9	The KM value of an enzyme is ----- a) The substrate concentration at half maximal velocity b) Dissociation constant of enzyme substrate complex c) The total enzyme concentration d) Half the substrate concentration at maximal velocity	K1	CO5
	10	Which of the following vitamin is also known as cobalamin? a) Vitamin B11 b) Vitamin B12 c) Vitamin B6 d) Vitamin B2	K2	CO5

Cont...

SECTION - B (35 Marks)Answer **ALL** questions**ALL** questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Classify the different phases of bacterial growth and its growth kinetics in detail.	K2	CO1
	(OR)			
	11.b.	Discuss in detail about passive and active nutrient transportations.		
2	12.a.	Develop an outline on pigments and its role in photosynthesis.	K3	CO2
	(OR)			
	12.b.	Construct Glycolytic pathway and discuss in detail.		
3	13.a.	Categorize the importance of regulatory and non -regulatory enzymes in metabolic pathway.	K4	CO3
	(OR)			
	13.b.	Interpret the Quorum sensing in intracellular signaling process.		
4	14.a.	Categorize the carbohydrate based on structure and emphasize its functions.	K4	CO4
	(OR)			
	14.b.	Classify DNA based on A,B and Z forms and construct the nucleic acid estimation with neat protocol.		
5	15.a.	Encounter the structure and functions of triglycerides and phospholipids in detail.	K3	CO5
	(OR)			
	15.b.	Develop the role of enzymes in analytical, industrial and diagnostic purpose of study.		

SECTION -C (30 Marks)Answer **ANY THREE** questions**ALL** questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Prioritize the bacterial cell wall with a note on peptidoglycan synthesis.	K4	CO1
2	17	Construct Tricarboxylic acid cycle with neat sketch and discuss the ATP production in detail.	K4	CO2
3	18	Elaborate the types of extremophiles and its significance in biotechnological field.	K5	CO3
4	19	Distinguish the structural features of protein with neat sketch.	K4	CO4
5	20	Predict structure of fat soluble vitamins and explain its functions in detail.	K5	CO5

Z-Z-Z END