

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MSc DEGREE EXAMINATION MAY 2025
(Second Semester)

Branch - BIOCHEMISTRY
MICROBIAL BIOCHEMISTRY

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	Name the enzyme responsible for cross linking the peptidoglycan chains in bacterial cell walls. a) Lysozyme b) Transpeptidase c) Pencillinase d) Endopeptidase	K1	CO1
	2	In the bacterial electron transport chain, find the molecule that typically serves as the final electron acceptor in aerobic respiration. a) Nitrate b) Sulfate c) Oxygen d) Carbon dioxide	K1	CO2
2	3	Show the role of NADPH produced in the HMP shunt. a) Oxidative phosphorylation b) DNA replication c) Fatty acid synthesis d) Glycogen synthesis	K2	CO2
	4	Infer the major function of the Pentose phosphate pathway in red blood cells. a) ATP production b) Glutathione reduction c) Lactate production d) Oxygen transport	K2	CO2
3	5	Choose the technique that is commonly used in secondary screening to assess metabolite production. a) High-performance liquid chromatography (HPLC) b) Gram staining c) PCR amplification d) Microscopy	K1	CO2
	6	Outline the use of Amylase in the textile industry. a) Desizing fabrics b) Dye fixing c) Fiber strengthening d) Stain removal	K2	CO3
4	7	Relate the key intermediate in the oxidation of branched-chain fatty acids. a) Propionyl-CoA b) Succinyl-CoA c) Acetoacetate d) Malonyl-CoA	K2	CO4
	8	Name the enzyme that is responsible for the initial step in the synthesis of fatty acids. a) Acetyl-CoA carboxylase b) Fatty acid synthase c) HMG-CoA reductase d) Lipoprotein lipase	K1	CO4
5	9	What is the importance of Proline? a) Collagen synthesis b) DNA replication c) Fatty acid metabolism d) Blood clotting	K1	CO5
	10	Show the end product of Pyrimidine biosynthesis. a) AMP b) GMP c) UMP d) IMP	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.	Develop the structure and synthesis of Bacterial Peptidoglycans.	K3	CO1
	(OR)			
	11.b.	Identify the Photosynthetic pigments and Photosynthetic apparatus in bacteria.		
2	12.a.	Survey the Oxidative Pentose phosphate cycle.	K4	CO2
	(OR)			
	12.b.	Analyse the TCA cycle and its components .		
3	13.a.	Distinguish the method, advantages and applications of SSF.	K4	CO3
	(OR)			
	13.b.	Examine the Bacterial Polysaccharides.		
4	14.a.	Criticize the Oxidation of Branched Chain Fatty acids.	K5	CO4
	(OR)			
	14.b.	Interpret the Biosynthesis of Beta Carotene.		
5	15.a.	Explain the Serine-Glycine pathway.	K5	CO5
	(OR)			
	15.b.	Evaluate the Microbial degradation of Lignocelluloses.		

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	Distinguish the Electron transport in Bacteria.	K4	CO1
2	17	Analyze the Interrelationship between EMP,HMP and ED pathways.	K4	CO2
3	18	Contrast the commercial production and applications of Amylase and Protease.	K4	CO3
4	19	Criticize the Oxidation of Fatty acids with Odd and Even number of Carbon atoms.	K5	CO4
5	20	Determine the Biosynthesis of Purines and Pyrimidines.	K5	CO5