22MBU310N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Third Semester)

Branch - **MICROBIOLOGY**

MICROBIAL PHYSIOLOGY AND METABOLISM

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	What is the purpose of using a selective medium in microbial nutrition? a) To provide all essential nutrients for growth b) To allow the growth of a specific microorganism while inhibiting others c) To enhance the growth rate of all microorganisms d) To determine the genetic makeup of microorganisms	K1	CO 1
	2	Which type of transport mechanism requires energy to move molecules against their concentration gradient? a) Passive diffusion b) Facilitated diffusion c) Active transport d) Osmosis	K2	CO 1
2	3	Which of the following factors can influence microbial growth? a) Temperature b) pH c) Oxygen availability d) All of the above	K1	CO 2
	4	Which method is commonly used to measure microbial growth quantitatively? a) Microscopy b) Plate count c) Optical density (turbidity) measurement d) All of the above	K2	CO 2
3	5	Which of the following is NOT a product of glycolysis? a) ATP b) Pyruvate c) Carbon dioxide d) NADH	K1	CO 3
	6	In which metabolic pathway is NADH primarily used? a) Glycolysis b) Citric acid cycle c) Electron transport chain d) Fermentation	K2	CO 3
4	7	Which of the following molecules is a direct precursor to the synthesis of adenosine triphosphate (ATP)? a) Inosine monophosphate (IMP) b) Guanosine monophosphate (GMP) c) Uridine monophosphate (UMP) d) Carbamoyl phosphate	K1	CO 4
	8	Which of the following is the end product of the degradation pathway of purine nucleotides? a) Urea b) Uric acid c) Ammonia d) Xanthine	K2	CO 4
5	9	Which of the following is a common end product of lactic acid fermentation? a) Ethanol b) Carbon dioxide c) Lactic acid d) Methane	K1	CO 5
	10	Which type of bacteria commonly performs mixed acid fermentation? a) Lactobacillus b) Escherichia coli c) Saccharomyces cerevisiae d) Streptococcus thermophilus	K2	CO 5

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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.	Write a short note on group translocation.	K2	CO 1
	(OR)			
	11.b.	What are the 3 types of active transport? Be able to diagram each processes.		
2	12.a.	Write about the Batch and continuous growth.	K3	CO 2
	(OR)			
	12.b.	Discuss in details about the Diauxic growth.		
3	13.a.	Explain in details about the principle of autoclave and its applications.	K3	CO 3
	(OR)			
	13.b.	Explain in details about the ETC.		
4	14.a.	Explain in details about the fatty acid synthesis.	K4	CO 4
	(OR)			
	14.b.	Discuss about purine and pyridimines.		
5	15.a.	Write short note on fermentation.	K4	CO 5
	(OR)			
	15.b.	Explain about the anaerobic respiration.		

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	Explain diffusion (passive and facilitated) and active transport.	K4	CO1
2	17	Explain the about the physical factors affecting influencing the bacterial growth.	K4	CO2
3	18	Elaborate the TCA cycle.	K4	CO3
4	19	Give an account on synthesis of Pepdiglycan.	K4	CO4
5	20	Write an essay on alcoholic fermentation.	K4	CO5

Z-Z-Z END