

GOVERNMENT COLLEGE AUTONOMOUS, RAJAMAHENDRAVARAM

Department of Microbiology

Model question paper for II B.Sc. Microbiology Honours

IV Semester, MINOR C 10 (- **MICROBIAL PHYSIOLOGY AND METABOLISM**)

Time : 3Hrs

Max Marks : 50

SECTION – A

Answer all the following questions, Draw labelled diagrams wherever necessary

(5x8=40 Marks)

Q.No.	Questions	Marks	BL	CO	PO
1.	Explain Nutritional requirements of Microorganisms	8	1&2		
(OR)					
	Explain Growth media - synthetic, nonsynthetic, selective, enrichment and differential media	8	1&2		
2.	Explain different phases of growth in batch cultures.	8	2&4		
(OR)					
	Explain First and Second law of Thermodynamics. Open and Closed system.	8	1&2		
3.	Explain Glycolytic pathway and mention its significance.	8	1&3		
(OR)					
4.	Explain ETS and oxidative phosphorylation.	8	2		
(OR)					
	Explain Fermentative modes in microorganisms with special reference to alcoholic, Lactic acid fermentations.	8	2&4		
5.	Explain Photosynthetic pigments, Photosynthetic apparatus in prokaryotes	8	2		
(OR)					
	Explain Outline of oxygenic photosynthesis in bacteria	8	2		

Section -B
Answer any five of the following
(10x1=10)

FILL IN THE BLANKS

1. _____ is a transport process that moves molecules against their concentration gradient using ATP. (Primary active transport)
2. In direct microscopic counting, a special slide called a _____ chamber is often used. (Petroff-Hausser or Hemocytometer)
3. The _____ law of thermodynamics states that entropy of a closed system always increases over time. (Second)
4. In anaerobic respiration, microorganisms use electron acceptors such as _____ instead of oxygen. (Nitrate / Sulfate / CO₂ / Ferric ions)
5. The _____ is the structure in prokaryotes where photosynthesis takes place. (Photosynthetic apparatus)

True or False (Tick the correct answer)

6. Facilitated diffusion requires ATP to transport molecules across the membrane. (False)
7. Generation time is the time required for a microbial population to double. (True)
8. The first law of thermodynamics states that energy can be created and destroyed. (False)
9. Lactic acid fermentation produces ethanol and carbon dioxide as major byproducts. (False) (It produces lactic acid, not ethanol.)
10. The photosynthetic apparatus in prokaryotes is located in the plasma membrane or specialized membrane structures. (True)