

- (b) Give an account of hydrogen oxidation by chemolithotrophic bacteria. 6
- (c) Define nitrate/ammonia respiration. 3
4. (a) Give an example of each of the following (any *five*):
- (i) Microaerophile
 - (ii) Anaerobic chemolithotroph
 - (iii) Mixotroph
 - (iv) ATP synthase inhibitor
 - (v) Hyperthermophile
 - (vi) Halophile. 1×5=5
- (b) Write short notes on the following:
- (i) ED Pathway
 - (ii) PEP-PTS 5×2=10
5. (a) Compare and contrast mitochondrial and bacterial ETC. 5
- (b) Write the complete balanced equation for the reactions catalysed by the following enzymes (any *three*):
- (i) Pyruvate kinase
 - (ii) Transaldolase
 - (iii) Nitrogenase
 - (iv) Phosphoketolase. 2×3=6
- (c) What are chlorosomes? Explain their significance. 4
6. (a) How do microorganisms adapt themselves to extreme conditions of pH? 5
- (b) What is substrate level phosphorylation? Explain giving a suitable example. 4
- (c) Discuss the mechanism of iron uptake in bacteria. 6

This question paper contains 2 printed pages.

Your Roll No.

Sl. No. of Ques. Paper : 2067 **GC-3**
Unique Paper Code : 32531325
Name of Paper : Microbial Physiology and Metabolism
Name of Course : B.Sc. (Hons.) Microbiology (CBCS)
Semester : III
Duration : : 3 hours
Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

*Attempt five questions in all. All questions carry equal marks.
Attempt all parts of a question together.*

1. (a) Define any *six* of the following:
- (i) Continuous culture
 - (ii) Generation time
 - (iii) Water activity
 - (iv) P:O ratio
 - (v) Specific growth rate
 - (vi) Symport
 - (vii) Pasteur effect. 2×6=12
- (b) Discuss the significance of PPP pathway. 3
2. Differentiate between any *three* of the following:
- (a) Facilitated and Passive diffusion
 - (b) Linear and Branched fermentation pathways
 - (c) Oxygenic and Anoxygenic photosynthesis
 - (d) Assimilatory and Dissimilatory nitrate reduction. 5×3=15
3. (a) Give the contributions of the following scientists:
- (i) Hans Krebs
 - (ii) Peter Mitchell
 - (iii) Loomis and Lipman. 2×3=6

P. T. O.

... a perfect gas expands isothermally to four times its initial