

**2021**

**MICROBIOLOGY — GENERAL**

**Paper : GE/CC-3**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Question no. 1** is compulsory and answer **any three** questions from the rest.

1. Answer **any ten** questions : 2×10
- (a) What is substrate level phosphorylation? Give one example.
  - (b) Give two examples of free living nitrogen fixer.
  - (c) What is active transport?
  - (d) Define symport and antiport.
  - (e) What is the significance of ammonia assimilation?
  - (f) How does pH affect bacterial growth?
  - (g) Name one inhibitor of electron transport chain and one inhibitor of ATP synthase.
  - (h) How does bacteria uptake iron?
  - (i) What is heterocyst?
  - (j) What is the importance of Pentose Phosphate Pathway?
  - (k) Differentiate between chemolithotrophs and chemoorganotrophs.
  - (l) Name the electron donors used by green sulfur and non-sulfur bacteria.
  - (m) Define extremophiles with example.
  - (n) Name two important enzymes of ED pathway.
  - (o) Give example of each : acidophilic and halophilic bacteria.
2. (a) Name two methods by which continuous bacterial culture can be obtained.
- (b) What are primary and secondary metabolites? Give examples.
- (c) What is diauxic growth curve? (2+2)+(2+2)+2
3. (a) What is the significance of ED pathway in bacterial metabolism?
- (b) Write down the NADH producing steps in TCA cycle.
- (c) Write down the reaction catalysed by succinate dehydrogenase in TCA cycle.
- (d) Define Acetogenesis. 2+3+3+2

**Please Turn Over**

4. Write short notes on (*any four*) : 2½×4
- (a) Nodule formation
  - (b) Methanogenesis
  - (c) Synchronous growth
  - (d) Siderophore
  - (e) Group translocation.
5. (a) Write down the regulatory steps in Glycolytic pathway with enzymes and coenzymes involved.  
(b) Briefly discuss ammonia assimilation.  
(c) Write down the importance of triose phosphate isomerase in glycolytic pathway. 3+4+3
6. Differentiate between (*any four*) : 2½×4
- (a) ED pathway and HMP shunt
  - (b) Homo-fermentative and hetero-fermentative bacteria
  - (c) Oxygenic and anoxygenic photophosphorylation
  - (d) Batch culture and continuous culture
  - (e) Passive and Facilitated diffusion
  - (f) Thermophiles and thermodurics.
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