2020

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.

Units : 1-6

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

1. Answer ***any ten*** from the following : 2×10

(a) What is symbiotic nitrogen fixation?

(b) Differentiate between thermophilic and psychrophilic bacteria.

(c) What is Pasteur effect?

(d) Define oligotrophs.

(e) What is a halophilic organism? Give an example.

(f) Give two examples of methane producing bacteria.

(g) Differentiate between active and passive transport.

(h) State the major differences between prokaryotic and eukaryotic photosyntheses.

(i) Which portion of growth curve shows rapid growth of bacteria?

(j) What is the fate of pyruvate under anaerobic condition?

(k) What do you mean by substrate level phosphorylation?

(l) What is proton motive force?

(m) Write down the role of nitrogenase.

(n) What is plasmolysis?

(o) What are siderophores?

2. (a) Name one inhibitor for each of glycolysis, TCA cycle and ETC and the corresponding reactions inhibited.

(b) Illustrate the reaction catalyzed by succinate dehydrogenase with coenzymes. Briefly mention the significance of this enzyme.

(c) Write down the reaction catalyzed by glyceraldehyde-3-phosphate dehydrogenase with coenzymes and mention its significance. 3+4+3

3. (a) What is generation time?

(b) Draw a growth curve and show how temperature can affect bacterial growth.

(c) What is specific growth rate?

(d) In which phase secondary metabolites are produced during growth? 2+4+2+2

4. Write short notes on ***any four*** : 2½×4

(a) Ammonia assimilation

(b) Methanogenesis

(c) Oxygenic photosynthesis

(d) Iron uptake

(e) Dissimilatory Nitrate Reduction

(f) Synchronous and continuous culture.

5. (a) Compare ED and EMP pathway.

(b) Excessive exhaustion causes muscle fatigue. Why?

(c) Mention one reaction of TCA cycle that generates NADH.

(d) What is group translocation? 4+2+2+2

6. Differentiate between ***any four*** : 2½×4

(a) Symport and antiport

(b) Aerobic and anaerobic respiration

(c) Autotrophs and Heterotrophs

(d) Aerobic and Anaerobic bacteria

(e) Mitochondrial and Bacterial ETC

(f) Homolactic and heterolactic fermentation.
