RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [2017-20]

B.A. /B.Sc. FOURTH SEMESTER (January – June) 2019

Mid-Semester Examination, March 2019

Date : 25/03/2019

MICROBIOLOGY (Honours)

Time : 2pm – 4pm

Paper: IV

Full Marks: 50

Answer the following questions:

1. a) Briefly explain how polymer saturated fatty acid are oxidized in vivo. [4]

   b) Taking Palmitate as an example, deduce the total energy released from oxidation of one molecule of fatty acid. [3]

2. a) What are "endocytosis" and "Exocytosis"? Explain with example. [2+2]

   b) Mention the important features and importance of signal sequences found in secretory proteins. [1.5+1.5]

3. a) Write down the differences between the assimilatory and dissimilatory usage of nitrate in nitrogen metabolism. [3]

   b) Mutation in 'cde' genes are always lethal. Then how was its function explored? [2]

   c) Write down the role of checkpoint kinases in the progression of cell cycle. [2]

   d) Name two motor proteins concerned with the intracellular transport of secondary materials. [1]

4. a) "Urea cycle is energetically expensive" — Explain. [2.5]

   b) Write short notes on: Maple syrup urine disease. [2.5]

   c) What are glucogenic amino acids? Give examples. [2]

5. How does rhizospheric soil differ from bulk soil? What are the different root exudates? What is the difference between habitat and niche? [2+3+2]

6. a) Unfolding of protein is initiated by breaking of forces that stabilize its native conformation – elaborate the nature of such forces. [2]

   b) State the roles played by Proteins Disulphide Isomerase (PDI) and Peptide Prolyl cis-trans Isomerase (PPI) in folding some proteins. [2]

   c) Write a short account on *E.coli* chaperones and chaperonins. [2]

7. a) What is Crabtree effect? [2]

   b) State the differences between hexokinase and glucokinase. [2]

   c) How does ATP plays dual role in controlling PFK-1 enzyme activity. [2]

   d) "Hormonal regulation of glycolysis and gluconeogenesis is mediated by Fructose 2,6 bi-phosphate" — Explain. [2]

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