

2123
M. E. (Bio-Technology)
First Semester
ME-BIO-101: Advances in Biochemistry

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 (Section-A) which is compulsory and selecting two questions each from section B-C.

x-x-x
Section A

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|---|----|---|---|
| I | a) | How methylotrophs differ from methanotrophs? | 2 |
| | b) | Name the different pigments involved in microbial photosynthesis. | 1 |
| | c) | How fructose enters into glycolytic pathway? | 2 |
| | d) | What are important characters of GPCRs? | 2 |
| | e) | What are sense and antisense RNA? | 2 |
| | f) | Name the alcohol present in triacylglycerol and sphingomyelins. | 1 |

Section-B

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|-----|----|---|----|
| II | a) | Discuss the sequence of reactions involved in hydrogenotrophic methanogenesis in class 1 methanogens. | 6 |
| | b) | How citrate is converted to succinate in TCA cycle? | 4 |
| III | a) | Describe the important steps of sulfate reduction pathway. | 5 |
| | b) | Write important differences between anoxygenic and oxygenic photosynthetic pathways. | 5 |
| IV | | Describe the steps involved in the synthesis of different secondary metabolites by shikimic acid pathway. | 10 |

Section-C

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|-----|----|--|----|
| V | a) | Discuss the steps involved in conversion of acetyl CoA to squalene. | 5 |
| | b) | How does signal transduction works? | 5 |
| VI | a) | Discuss the structure of Dicer and its role in RNA interference. | 5 |
| | b) | What are the major applications of antisense strategies in gene silencing? | 5 |
| VII | | Discuss the principle and mechanism of RNA interference. What is the importance of RNAi. | 10 |