

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

SECOND YEAR

B.A./B.SC. FOURTH SEMESTER (January – June) 2013

Mid-Semester Examination, March 2013

Date : 04/03/2013

MICROBIOLOGY(Honours)

Time : 2 pm – 4 pm

Paper : IV

Full Marks : 50

1. a) Write down the features of soil bacterial groups classified by S. Winogradsky. [4]
b) What are meant by rhizosphere and rhizoplane? [2]
c) What is ammensalism? Cite suitable example. [2]
- Or,**
- a) Write the disadvantages of agar plate method in enumeration of bacteria. [2]
b) Mention two soil factors which are congenial for microbial growth. [2]
c) What is SOM? State its function. [2]
d) What is mutualism? Write an example. [2]
2. a) What are the principal components of milk? [2]
b) What happens to milk if it is taken from an infected cow? [2]
c) What is ropy or slimy milk? [1]
d) Name the organism which cause mastitis. [1]
e) Why does milk coagulate when rennin is added? [2]
3. a) Briefly explain the important differences between the life cycle of *Saccharomyces cerevisiae* and *Schizosaccharomyces pombe* [3]
b) Discuss the role of HO protein in mating type switching of *S. cerevisiae*. [2]
c) Why is *S. cerevisiae* considered as popular model organism in laboratory? [1]
4. a) Glucose –6–Phosphate Dehydrogenase deficiency has selective advantages over malaria. —Justify. [3]
b) Glycolysis is not the exact reversal of gluconeogenesis —Justify. [2]
c) Glycolysis is used for rapid ATP production —Comment on this result. [2]
d) Write short notes on (any one) : [3]
i) Stickland Reaction
ii) Glyoxylate Cycle
5. a) How fructose enters into glycolysis? [2]
b) What are the difference between homofermentative and heterofermentative processes? [2]
c) What do you mean by substrate level phosphorylation? [1]
6. a) Name the α -Keto acid that is formed by transamination of each of the following amino acids : [1]
(i) Alanine (ii) Glutamate
b) What are glucogenic and ketogenic amino acids? Give example. [1.5]
c) Briefly highlight the role of Pyridoxal Phosphate in transamination reactions. [2.5]
7. Name the reaction catalyzed by the following enzymes :
a) XMP – Glutamine amidotranferase [2]
b) FGAM cyclase [1]
c) Orotidylate decarboxylase [2]
d) AIR carboxylase [1]
8. State the reaction in *de novo* synthesis of purine that requires N^{10} — Formyl H_4 folate as cofactor. [2]

