

# RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

SECOND YEAR

B.A./B.SC. FOURTH SEMESTER (January – June), 2012

Mid-Semester Examination, March 2012

Date : 19/03/2012

MICROBIOLOGY (Honours)

Time : 2 pm – 4 pm

Paper : IV

Full Marks : 50

(Use separate answer scripts for each group)

## Group – A

1. a) Write down the similarities between the nitrogen and sulphur cycle? [3]
- b) What is rhizosphere? Write the reasons behind the increased microbial activity in rhizosphere. [2]
- c) What are the differences between the assimilatory and dissimilatory nitrate reduction? [3]

OR

- a) What are assimilatory and dissimilatory sulphate reduction? [3]
  - b) What is meant by physiologically dry soil? [2]
  - c) What are differences between mutualism and cooperation? [3]
2. a) What are secretory proteins? Give examples. [2]
  - b) Write down the main differences between a budding yeast and fission yeast. [3]
  - c) Briefly describe the SRP pathway of secretion system. [3]

OR

- a) Briefly explain the importance of signal sequences in the secretion of proteins. [2]
  - b) “*S. cerevisiae* is a popular model organism in laboratory.” Explain why? [2]
  - c) How mating type switching occurs in *S. cerevisiae*? Explain briefly mentioning the role of different proteins involved in this process. [4]
3. Answer any four questions : [4×2 = 8]
    - a) What is Mastitis?
    - b) What are thermophilic microorganisms?
    - c) How does TMAO reduces shelf life of modified atmosphere packaged fish?
    - d) What are the antimicrobial barriers present in egg white?
    - e) Write down the advantages and disadvantages of slow freezing in food preservation.

## Group – B

4. a) Give an example of inhibition due to excess substrate. [2]
  - b) PFK is known as pacemaker of glycolysis— Justify . [3]
  - c) Gluconeogenesis is not the exact reversal of glycolysis— Justify the statement. [3]
  - d) What are the basic differences between HK and GK? [2]
5. a) Give the reactions for the catabolism of alanine in a growing bacteria by the following ways : [1·5×4]
    - i) Transamination
    - ii) Oxidative Deamination
    - iii) Hydrolytic Deamination
    - iv) Decarboxylation
  - b) What are glucogenic and ketogenic amino acids? Give example. [2]

OR

- a) What is Transamination? What is the exact mechanism? Give example.

b) What is the difference between oxidative and non oxidative deamination?

[2]

6. Answer any four of the following :

[2×4]

