

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [BATCH 2014-17]

B.A./B.Sc. FOURTH SEMESTER (January – June) 2016

Mid-Semester Examination, March 2016

Date : 17/03/2016

MICROBIOLOGY (Honours)

Time : 11 am – 1 pm

Paper : IV

Full Marks : 50

1. a) Cite two examples for each where amino acids are synthesized from and broken down to TCA cycle intermediates. [2]
b) When pyridoxal phosphate forms external aldimine, it does not detach from the active site of transaminases— Why? [2]
c) Define glucogenic and ketogenic amino acids with example. [1]
2. a) Briefly describe the life cycle of a budding yeast. Explain with a suitable sketch. [3]
b) What is 'HO' endonuclease? Mention its function in mating switching of yeast. [2]
3. Provide in your answerscript the 'reaction catalyzed' and 'cofactors needed' against each of the following enzymes : [2×5]

| | | Reaction catalyzed | Cofactors needed |
|----|---|--------------------|------------------|
| a) | Phosphoribosyl glycinamide formyl transferase | ? | ? |
| b) | Thymidylate synthase | ? | ? |
| c) | Xanthine oxidase | ? | ? |
| d) | Methylferase | ? | ? |
| e) | IMP dehydrogenase | ? | ? |

4. a) State the contributions of Winogradski in soil microbiology. [2]
b) Mention two features of Cyanobacterial cells meant for nitrogen fixation. [2]
c) State the disadvantages of agar plate method in enumeration of soil microorganisms. [2]
d) Mention two physical properties of soil congenial for microbial growth. [2]
5. a) What is mastitis? [2]
b) Write down the function of caseinase. [2]
c) What do you mean by thermophilic bacteria? Give an example. [2]
d) What is the function of lysozyme? [1]
6. a) How is fructose metabolised in our body? [2.5]
b) What is Crabtree effect? [1.5]
c) Fluoride is an animal poison —justify. [2]
d) What is Cori Cycle? [2]
e) How is glycolysis linked with pentose phosphate pathway? [2]
7. a) How variation of pH can denature a protein? [1]
b) Protein folding and unfolding is a 'all-or-none' phenomenon —comment. [1]
c) What is chaperonin? [1]
d) State the characteristics of signal sequences for proteins targeted to peroxisome and nucleus? [2]