RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

SECOND YEAR [BATCH 2015-18]

B.A./B.Sc. FOURTH SEMESTER (January – June) 2017

Mid-Semester Examination, March 2017

Date : 15/03/2017

MICROBIOLOGY (Honours)

Time : 11 am – 1 pm

Paper : IV

Full Marks : 50

1. a) State the step in *de novo* Purine biosynthesis with N^{10} - Formyl THFA as a cofactor. [2]
   b) State the step in *de novo* Pyrimidine biosynthesis with N^5, N^{10} - Methylene THFA as a cofactor. [2]
   c) What do the following enzymes catalyze : [2+1]
      i) Xanthine oxidase
      ii) Guanine deaminase

2. a) List out the different assimilatory and dissimilatory reactions required in nitrogen cycle. [2]
   b) Mention the steps involved in ammonium assimiation during low level of NH_4^+ concentration & high level of NH_4^+ concentration in soil. [1·5+1·5]

3. a) What is 'HO' endonuclease? Explain its role in mating type switching of yeast. [1+2]
   b) Why is yeast considered as a model organism in laboratory? [2]

4. a) Where does the carbon and nitrogen come from to produce urea? Mention briefly. [2·5]
   b) What is the rate limiting step in the urea cycle? How is it allosterically regulated? [2·5]

5. a) Name one important physical and one chemical factor which influence microbial growth in soil? [2]
   b) Distinguish between zymogenous and autochronous bacteria. [2]
   c) What is ammensalism? [2]
   d) What is meant by rhizospheric effect? [2]

6. a) How does rennet coagulate milk? [2]
   b) What is mastitis? [2]
   c) What do you mean by ripening or aging of meat? [2]
   d) Name one thermoduric microorganism. [1]

7. a) Glycolysis is used for rapid ATP production. Justify the statement. [2]
   b) Arsenate can be considered as an inhibitor of glycolytic pathway. Explain the step with proper mechanism. [2]
   c) What are the basic differences between hexokinase and glucokinase? [2]
   d) What will be the fate of pyruvate after being formed via glycolysis? [2]

8. a) Explain the term Proteostasis. [1]
   b) State how chaperones and chaperonins help bacterial proteins to fold. [2]
   c) Protein misfolding creates many diseases — elaborate with examples. [2]

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