RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous College under University of Calcutta)

FIRST YEAR [2015-18]
B.A./B.Sc. FIRST SEMESTER (July – December) 2015
Mid-Semester Examination, September 2015

Date : 14/09/2015

Time : 11 am – 1 pm

MICROBIOLOGY (Honours)

Paper : I

Full Marks : 50

1. Answer **any three** questions :
   a) How did Louis Pasteur prove that organisms originate from a preexisting one and not abiogenically? [3]
   b) What is meant by a strain in Microbiology? What is a dendrogram? [1½+1½]
   c) Why is ribosome used for phylogenetic classification of living kingdom? What is a signature sequence? [1½+1½]
   d) What is the "Germ theory of disease"? Mention two exceptions of Koch's postulates. [1+2]

2. a) Write down the structure and functions of Braun's lipoprotein. [2+2]
   b) How does capsule protect bacteria? [2]
   c) Write down the structure of teichuronic acid. [2]

3. State the structural characteristics of a peptide bond. How glycine and proline influence dihedral angles (ϕ and φ angles) around a peptide backbone? [2½+2½]

4. a) How many milliliters of 5M H_2SO_4 are required to make 1500ml of a 0·002M H_2SO_4 solution? [2]
   b) What do you mean by 'true acidity' and 'titrable acidity'? [1+1]
   c) Define surface tension and viscosity. [1+1]

5. Write down the structures of the following : [4×2]
   a) pG
   b) Gp – 2´
   c) syn – ATP
   d) 3´ endo Cytosine

6. a) What are the symmetry elements present in boat form of cyclohexane? [2]
   b) What are the drawback of D/L Nomenclature? [2]
   c) What do you mean by pseudochirality? Give example. [2]
   d) Draw the energy profile diagram of cyclohexane. [2]
   e) Write down the most stable conformation of 4t-butyl cyclohexanol and 1,3 dimethyl cyclohexane. [1]

7. a) Which measures of central tendency would be most appropriate in the following cases [1+1]
      i) The average success of a group of students
      ii) The most popular choice of colour in a festival
   b) What is class mark and frequency density? [1+1]
   c) What is pictogram? [1]

OR,

   a) The mean of 40 observations was 160. It was detected on rechecking that the value 125 was wrongly copied as 165 for the computation of mean. Find the correct mean.
   b) The number of absentees in a class in the last 15 days is given below. Show the following data in a simple frequency distribution.

   1, 2, 2, 1, 0, 4, 3, 4, 1, 0, 2, 3, 2, 0, 3 [3+2]

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