RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. FIFTH SEMESTER EXAMINATION, DECEMBER 2015

THIRD YEAR [BATCH 2013-16]

Date : 18/12/2015 **MICROBIOLOGY (Honours)**

Time : 11 am – 1 pm **Paper :** V Full Marks : 50

Group – B

(*Answer **any five** questions*)

1. a) How will you determine the site of assembly of the viruses? [2]
   b) Lipids present in virions are not determined by the viruses — Justify the statement. [2]
   c) Genome of T_4 phage is linear in its capsid. But upon infection to *E.coli* cell it would become circular —explain the statement. [2]
   d) What do you mean by Stealth Technology of T_4 phage? [2]
   e) How does viroid replicate? [2]

2. a) Draw a typical one step growth curve of virus and mention each phases. [3]
   b) Do you expect any introns in T_4 genome? If yes explain. [1]
   c) Differentiate between λ - induction and lysogenic conversion. [3]
   d) What strategies are taken by the T odd phages to enter its genetic material into the host? [2]
   e) What do you mean by inverted terminal redundancy? [1]

3. a) What will happen if bacteria are infected with
      i) λCII^- and $\lambda CIII^-$.
      ii) Normal λCII with Mutant $\lambda CIII$. [3]
   b) Is it necessary to use maltose in the medium for the expression of host receptors for λ phage? [2]
   c) Discuss the role of cro protein in lambda replication. [2]
   d) Compare the entry of T4 and T7 phage in host. [1]
   e) How many different types of plaques can be observed? [2]

4. a) Do you think that normal flora may act as opportunistic pathogen? [3]
   b) Write down three important beneficial roles of normal flora. [3]
   c) Why excess use of body oil may lead to acne? [2]
   d) What do you mean by pathogenicity island? [2]

5. a) What is the difference between pathogenicity and virulence? [3]
   b) What do you mean by portal of entry of pathogens? Write down the important portals of entry for human pathogens. [2+2]
   c) What are the different types of invasins used by bacteria during infection? [3]

6. a) Differentiate between cholera toxin and botulinum toxin. [4]
   b) What is ADP-ribosylation? [3]
   c) How does superantigen cause disease. [3]

7. Define the following terms : [4×2·5]
   a) Desitope
   b) Paratope
   c) Idiotype
   d) Histotope

8. a) T-cell epitopes are non-topological —justify. [3]
   b) Clonal expansion follows clonal selection —state true or false. [3]

c) Briefly describe with diagram the number of hypervariable regions making contact with antigen on one arm of antibody. [4]

9. a) What do you mean by "Antigenically committed" lymphocyte? [2]
   b) What do you mean by complete and incomplete adjuvant? [2]
   c) How is ADCC different from Opsonization? [3]
   d) Compare MHC molecules in terms of structure, origin and function. [3]

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