

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College under University of Calcutta)

B.A./B.SC. FIFTH SEMESTER EXAMINATION, DECEMBER 2012

THIRD YEAR

MICROBIOLOGY (Honours)

Date : 19/12/2012

Time : 11 am – 1 pm

Paper : V (Gr. B)

Full Marks : 50

Group-B

Virology, Medical Microbiology, Immunology

4. Answer **any two** questions from the following:

- a) i) How will you determine the site of assembly of the viruses. 2
- ii) Lipids present in virion are not determined by the viruses- Justify the statement. 2
- iii) How will you determine the nucleic acid of the virus is linear or circular? 2
- iv) What do you mean by p^{32} suicidal rate? 1.5
- b) i) Compare the viral and the bacterial growth curves. 2.5
- ii) Explain lysogenic conversion with an example. 3
- iii) Write a brief account on "Lysis from without". 2
- c) i) What are satellite viruses? 2
- ii) Define Peplomers. 2
- iii) What are the modifications present in T4 phage DNA? 2
- iv) What should be the probability of the bacteria not being attacked by the virus if the MOI is 2 ? 1.5
- d) i) What do you mean by terminal redundancy and cyclic permutation? 2
- ii) What are Prions? 2
- iii) What will happen when bacteria are infected with-
 - a) λCII^- & $\lambda CIII^-$ b) Normal λCII with mutant $\lambda CIII$ 2
- iv) Give one example each of partially ds DNA virus, oncogenic virus and insect virus. 1.5

5. Answer **any two** questions from the following:

- a) i) Explain the different ways by which bacteria can evade the host immune response. 3
- ii) Differentiate between infection and disease. 2
- iii) How do the lungs avoid from being colonized by microorganisms. 2
- iv) Give an example of a AB_5 toxin. 0.5
- b) i) How does the gastrointestinal tract act as a barrier for microorganisms? 2.5
- ii) What are adhesins? Give examples of two non fimbrial adhesins and their respective receptors. 1+2
- iii) What is toxoid? 2
- c) i) Compare the mode of action of Botulinum and Tetanus toxin. 4
- ii) Burned patients are especially susceptible to *P.aeruginosa* infections. Why? 1.5
- iii) Write short notes on Pathogenicity island 2
- d) i) What is the function of coagulase in bacterial invasion. 1.5
- ii) Write down the mechanisms followed by bacteria to avoid killing by complement system proteins. 3
- iii) What differences would you observe between a germ free animal and normal animal and why? 1.5+1.5

6. Answer **any two** questions from the following:

- a) Differentiate between the following: 2x5=10
 - i) Antigen and Hapten.
 - ii) Innate and Acquired Immunity.
 - iii) Paratope and Epitope.
 - iv) Isotypic and Allotypic determinants.
 - v) Isotype and Idiotype.

b) i) An U.V. inactivated (killed) virus can activate both T_H and T_C cells. Justify.	2
ii) What are "Cluster of differentiation" antigens?	2
iii) If you treat I_gG with papain, pepsin and mercaptoethanol separately, what fragments will be produced in each case?	3
iv) What is Clonal selection in activation of antibody producing cell?	2
v) Where does s- I_gA generally occur?	1
c) i) What do you mean by secondary immune response?	3
ii) All immunogens are antigens but not vice versa. Justify the statement.	3
iii) When are B lymphocytes said to be antigenically committed?	2
iv) What is the role of histamine in inflammatory response?	2
d) i) What are altered self cells?	2
ii) What are Pattern Recognition Receptor?	3
iii) Homopolymers are weakly immunogenic than heteropolymers- Justify.	2
iv) Design an experiment to differentiate between B and T cell epitopes.	3

