

**C 3082**

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Sixth Semester

Biotechnology

BT 1014 — MOLECULAR PATHOGENESIS

(Regulation 2004)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Name the type of disease that would have a low  $ID_{50}$  but a high  $LD_{50}$ . Is it possible to have a disease for which  $LD_{50}$  is an appropriate measure but not  $ID_{50}$ ? Is there a combination of high or low  $ID_{50}$  and high or low  $LD_{50}$  that should not be possible?
2. Highlight the disadvantages in following Koch's postulates.
3. How do gram positive and gram negative bacteria differ in cell wall antigens.
4. What are siderophores? What is its role in pathogenesis?
5. Write a note on E. coli 0157 H7.
6. What common features you can identify between E. coli and Shigella with reference to their virulence factor.
7. What are Black holes?
8. Distinguish antigenic drift and antigenic shift.
9. Explain the mode of action of amantidine on influenza A virus.
10. Explain the similarity and difference between subunit vaccine and toxoid.

PART B — (5 × 16 = 80 marks)

11. (a) Discuss the various pathogenic types that cause respiratory diseases.

Or

- (b) Explain how a pathogen overcomes the various defense mechanisms in the host.

12. (a) Discuss the following (i) Apical organelles in merozoites (ii) host erythrocyte modification by plasmodium.

Or

- (b) Write a note on the following (i) Importance of Th1 and Th2 lymphocytes in bacterial infection (ii) ABC transporters (iii) Beneficial uses of exotoxins.
13. (a) Write a detailed note on following (i) measuring infectivity and virulence (ii) Principles of vaccine development.

Or

- (b) Discuss the types, structure function and pathogenesis of Vibrio cholera toxin.
14. (a) Describe the disease, virulence factors & their gene regulation in Enterohemorrhagic and Enterotoxigenic E.coli.

Or

- (b) Discuss the role played by chromosomally encoded genes in virulence of Shigella.
15. (a) Write a note on (i) Recombinant based In Vivo Expression Technology (ii) mRNA differential display (iii) Genome walking (iv) transcriptional profiling.

Or

- (b) Discuss the types & mode of action of different exotoxins.