

**B.TECH., DEGREE EXAMINATIONS: NOV/DEC 2012**

Fifth Semester

**BIOTECHNOLOGY**

BTY202: Molecular and Microbial Pathogenesis

**Time: Three Hours**

**Maximum Marks: 100**

**Answer All the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. The rabies vaccine was initially created by
  - (a) Louis Pasteur
  - (b) Charles Chamberland
  - (c) Emile Roux
  - (d) Joseph Meister
  
2. The postulates were formulated by Robert Koch and
  - (a) Louis Pasteur
  - (b) Friedrich Loeffler
  - (c) Emile Roux
  - (d) Joseph Meister
  
3. Cilia is a organelle found in
  - (a) Human
  - (b) Animal
  - (c) Eukaryotes
  - (d) Prokaryotes
  
4. Humoral cell mediated entire process is aided by
  - (a) CD4+ T-helper 2 cells
  - (b) CD8+ T-helper 4 cells
  - (c) CD4+ T<sub>C</sub> 2 cells
  - (d) CD8+ T<sub>C</sub> 2 cells
  
5. V. cholerae have two circular chromosomes
  - (a) Two circular chromosomes
  - (b) two linear chromosomes
  - (c) four circular chromosomes
  - (d) four linear chromosomes
  
6. Neuraminidase enzymes are that cleave the atom
  - (a) Glycosidic linkages
  - (b) peptide bond
  - (c) terminal carbon
  - (d) beta lactogalactosidic linkage

7. Cytopathic effect or cytopathogenic effect (abbreviated CPE) refers to

- (a) Degenerative changes in cells                      (b) apoptosis  
(c) shrinking of cells                                      (d) regenerative changes in cells

8. Second messengers such as cyclic AMP and

- (a) cyclic AMP                      (b) IP<sub>3</sub>                      (c) both a and b                      (d) tyrosine kinase

9. Virus-like particle (VLP) vaccine against

- (a) Human papillomavirus                                      (b) *Vibrio cholerae*  
(c) both a and b    (d) Human Influenza virus

10. Capsules play important roles in immune evasion, as they inhibit

- (a) Phagocytosis    (b) B cell production  
(c) Pinocytosis    (d) Tc Cell proliferation

**PART- B (10 x 2 = 20Marks)**

11. Define Koch's postulates theory.

12. List out the major types of bacterial toxins?

13. What is meant by macropinocytosis?

14. Difference between heat stable and heat labile enterotoxin?

15. What are all the factors involved in host responses?

16. What is meant by viral plaque?

17. What are all the steps involved in phagocytosis?

18. What is meant by merozoite?

19. What is the function of sebum?

20. Define cocktail vaccines.

**PART C (5 x 14 = 70 Marks)**

21. (a) With a neat diagram explain in detail about vaccine production and its types.

(OR)

(b) List out the types of entry by pathogenic bacteria and virus; explain in detail about modes of entry.

22. a) Write down the mechanisms of host defenses against pathogens and its types

(i) First line defenses (7)

(ii) Second line defenses (7)

(OR)

(b) With a neat diagram explain in detail about mechanism of humoral and cellular mediated defense

23. a) Define virulence genes. Explain in detail about the following factors (2)

(i) Virulence factors (4)

(ii) Virulence lifestyle factors (4)

(iii) Virulence associated factors (4)

(OR)

b) With a neat diagram explain in detail about the life cycle of plasmodium and its processes

24. a) List out the types of assays for identification of virulence factors and its applications

(OR)

(b) Give an account on molecular characterisation of virulence factors

(i) Signal transduction (7)

(ii) Host responses (7)

25. (a) With a neat diagram explain in detail about process involved in production of vaccines and its applications

**(OR)**

(b) List out the methods involved in diagnosis of virulence factors, explain the following

(i) Immuno techniques (7)

(ii) DNA based techniques (7)

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