Register Number: ……

**B.TECH. DEGREE EXAMINATIONS: NOV/DEC 2010**

Third Semester

**BIO TECHNOLOGY**

BTY104: Cell Biology

**Time: Three Hours** **Maximum Marks: 100**

**Answer ALL Questions:-**

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

1. Most abundant class of lipids in plasma membrane are_____

   a)Cholesterol b) sphingolipids c) Phosphoglycerides d) Fatty acids

2. At which phase of meiosis crossing over takes place

   a) Metaphase I b) Metaphase II c) anaphase II d) anaphase I

3. The instrument used to separate one cell from number of other cells is _____

   a) MALDI b) PAGE c) FACS d) Cell counter

4. An impure organelle fraction obtained by differential centrifugation can be further purified by

   a) ultra centrifugation b) equilibrium density-gradient centrifugation

   c) cooling centrifuge d) low speed centrifugation

5. Transport through ATPase pump is

   a) Active transport b) Reverse osmosis c) Ionic exchange d) Passive transport

6. F- class and V- Class pumps do not form the intermediates.

   a) Lipid b) glycoprotein. c) phospolipid d) carbon

7. Actin is a component of an

   a) Intermediate filament b) Microtubule c) Tubulin d) Microfilament

8. Cell junctions in plant cells that provide channels between adjacent cells are generally

   a) Anchoring junctions b) Gap junctions c) Plasmodesmata d) Tight junctions

9. Autocrine / Paracrine signalling system has a signalling distance and duration response of

   a)Short; long b) Long; long c) Long; short d) Short; short

10. Which of the following statements about G protein signalling pathways is false?

    a) The first second messenger to be identified was cAMP

    b) Most $Ca^{2+}$ mediated signal transduction cascades act through the protein calmodulin, a

$Ca^{2+}$ binding protein that is present in every eukaryotic cell

c) Receptor serine / threonine kinases directly activate G proteins, which in turn activate second messengers

d) Inositol triphosphate and diacylglycerol act as second messengers in two branches of the phosphatidylinositol signalling pathway.

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

11. List out characteristic features of histones.
12. What is tonoplast?
13. Mention the principle of Transmission Electron Microscope?
14. Differentiate primary continous cell lines
15. Mention the effect of ouabain on sodium – potassium pump and its consequences.
16. What is exocytosis?
17. Give the role of tubulin
18. Write a few salient points on microtubules
19. How does $Ca^{2+}$ act as second messenger?
20. What is endocrine signalling?

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

**21.** a) Describe the histone mediated chromosomal DNA packaging and organization. **(OR)**
b) Give an account of mitosis.

22. a) Explain the principle and working of scanning electron microscope. **(OR)**
b) Explain the principle and working of flow cytometry.

23. a) Describe the active transport of $Na^+$ and $K^+$ by the sodium potassium pump. **(OR)**
b) What is endocytosis? Explain in detail.

24. a) Explain in detail the molecular structure and regulation of tight junctions and gap junctions. **(OR)**

b) Write short notes on
(i) Actin (7)
(ii) Myosin (7)

25. a) Describe in detail autocrine and paracrine signaling. **(OR)**
b) What are second messengers? Explain the role of G proteins.

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