Register number----------

B.TECH DEGREE EXAMINATIONS: OCTOBER / NOVEMBER-2008

Third Semester

BIOTECHNOLOGY

U07 BT302: Cell Biology

Time: Three hours **Maximum Marks: 100**

Answer ALL Questions: -
PART A (20 x 1 = 20 Marks)

1. The following cytoskeletal elements shows polarity except

   a) Microfilaments b) Intermediary filaments
   c) Microtubules d) Actin filament

2. rRNAs are synthesized in

   a) Ribosomes b) Nucleolus c) SER d) Mitochondria

3. Wedge shaped lipid molecules are packed in ---------- form when they are exposed to water.

   a) cylindrical b) Micelle c) irregular d) bilayer

4. The following statements are correct except

   a) Tropomycin is a calcium binding protein
   b) Z lines is constituted mainly by alpha actinin and Cap Z protein
   c) Muscle contraction is due to Z lines coming closer together
   d) Myosin is a heteromeric protein comprised of 2 light and 2 heavy chains

5. Name the transport protein which is involved in ATP synthesis.

   a) P type ATPases b) V type ATPases c) F pump d) ATP Binding Cassettes

6. Specify the location of calmodullin dependent Ca ATPase in cells.

   a) Plasma membrane b) Sarcoplasmic reticulum c) Mitochondria d) Golgi

7. The HIV virus enter into the host cell by ----------

   a) receptor mediated endocytosis b) phagocytosis
   c) pinocytosis d) All the above

8. Why ion channels are considered the fastest means of transport ?

   a) Because they transport ions.
   b) ATP is not involved in the transport
   c) They don't show conformational change during transport
   d) They are abundant in nerve and muscle cells

9. Gs stimulated increase in cAMP promotes---------- in muscle cells.

   a) Glycogenolysis b) Glycogenesis c) Gluconeogenesis d) All the above

10. Signaling between adjacent cells is termed as

    a) Autocrine signaling b) paracrine signaling
    c) Endocrine signaling d) Exocrine signaling

11. Following receptors are examples of nuclear receptors except

a) Vit D3 Receptor b) retinoic acid receptor
c) Estrogen receptor d) insulin receptor

12 What is HRE?

a) High reacting element b) Hyperpolarised receptor enzyme
c) Human retinal enzyme d) Hormone responsive element

13. The adrenergic receptor which has coupled inhibitory G protein is ----------

a) ά1 b) ά2 c) β1 d) β2

14. Name the enzyme that is activated by light induced Gt protein of rhodopsin in rods of eye

a) Phospholipase C b) cGMP phosphodiesterase
c) Adenylyl cyclase d) Protein kinase C

15. Protein Kinase A is an example of --------- type of kinases

a) Tyrosine kinases b) Histidine Kinases
c) Ser/thr kinases d) Arginine kinases

16. What is the role of nitroglycerin in heart smooth muscle?

a) promote contraction b) increases relaxation
c) provoke stimulation d) increases circulation

17. Organotypic culture is an example of

a) Primary cell culture b) Primary explant
c) Cell fusion d) Three dimensional cell culture

18. The protease commonly used for disaggregation of cells during subculture is

a) Lyase b) Trypsin c) RNAse d) hydrolase

19. The number of times that the culture is subcultured is called

a) generation number b) Passage number
c) subculture number d) population number

20. The following methods are adopted to propagate plants except

a) Micropropagation b) Protoplast fusion
c) Tissue culture d) Hybridoma technology

PART B (5 x 16 = 80 Marks)

21.(a) i) List the differences between eukaryotic and prokaryotic cells (8)

ii) Specify the role of proteins in membrane organization (8)

(OR)

21. (b) i) E
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ii) V

22. (a) i) C
ii) E
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22. (b) i) El
ii) C

23. (a) i) Gi
ii) Ex

23. (b) i) Dis
ii) Wh

24. (a) i) Exp
ii) Co

24. (b) i) Disc
ii) Cor

25. (a) i) Writ
ii) Elab

25. (b) i)What
prod
ii) Disc
appli

21. (b) i) Explain the different phases in cell cycle. Add a note on molecules that control the cell cycle. (10)

ii) What are cytoskeletal elements? Explain the organization and function of microtubules. (6)

22. (a) i) Compare and contrast active and passive transport with specific examples. (8)

ii) Explain the role of Na+ K+ ATPase in maintaining osmotic balance of the cell. (8)

(OR)

22. (b) i) Elaborate on receptor mediated endocytosis. (6)

ii) Comment on different types of cotransporters each with an example. (10)

23. (a) i) Give a brief note on membrane bound receptors. (8)

ii) Explain the role of nuclear receptors in regulation of gene expression. (8)

(OR)

23. (b) i) Discuss the various methodologies employed in characterization of receptors. (10)

ii) What are cytosolic receptors? How they differ from nuclear receptors? (6)

24. (a) i) Explain the role of cAMP in signal transduction. (10)

ii) Comment on adrenergic receptors. (6)

(OR)

24. (b) i) Discuss calcium ion influx. How does calcium mediate signaling within the cell? (8)

ii) Compare the different types of protein kinases with their significance in signal cascade. (8)

25. (a) i) Write short notes on cell line, primary cell culture, sterilization, preservation of cells. (8)

ii) Elaborate on the different strategies employed in characterization of cells. (8)

(OR)

25. (b) i)What is hybridoma technology? How it is used to propagate B cells for antibody production? (8)

ii) Discuss the various types of three dimensional cultures with respect to their potential applications. (8)

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