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SARDAR PATEL UNIVERSITY
 BACHELOR OF SCIENCE (B.Sc.)
 B.SC VITH SEMESTER ON DEMAND EXAMINATION JUNE – 2022
 THURSDAY, 23TH JUNE 2022
 10:00 AM TO 12:00 AM
 SUBJECT: BIOTECHNOLOGY
 COURSE: US06CBIT21
 (MOLECULAR COMMUNICATIONS)

TOTAL MARKS: 70

Figures to the right indicate marks:

Q1. Multiple Choice questions:

(1 x 10 = 10)

i) Which of the following is required for binding of Gelsolin to Actin ?

- A) Potassium B) Magnesium C) Calcium D) Sodium

ii) Which kinds of molecules can pass through a cell membrane most easily?

- A) Ionic B) Large polar
 C) Small and hydrophobic D) Large and hydrophobic

iii) As we increase the length of the fatty acid chain, the fluidity of the lipid bilayer will:

- A) Increases B) Decreases C) No change in fluidity D) None of these

iv) Nucleotide binds to α -tubulin is

- A) ATP at interface between α & β tubulin B) ADP at distal end of α tubulin
 C) GTP at interface between α & β tubulin D) GDP at interface between α & β tubulin

v) Erythrocytes (RBC) are put into an isotonic solution. What will happens to them, when salt is added to the solution?

- A) Proteins will pump salt into the cells B) Cells will burst
 C) Cells will crenate. D) water enters into the cells.

vi) Which of the following is NOT a secondary messenger?

- A) cAMP B) cGMP C) cyclin D) DAG

vii) Which category of receptors are mostly involved in cell division, growth and differentiation?

- A) GPCR B) RTK C) DAG D) Grow-TK

viii) Which of the following plant hormones increase inter-nodal length?

- A) ABA B) IAA C) Gibberelins D) Ethylene

ix) How many α -helix are there in a single GPCR molecule.

- A) Six B) Eight C) Seven D) three

x) The Apical Dominance is caused by which plant growth regulator?

- A) Cytokinin B) Auxin C) Gibberellin D) Ethylene

Q2. FILL IN THE BLANKS AND TRUE/ FALSE TYPE.

(8Q X 1M = 8M)

i) The Backbone of the Plasma Membrane is formed by _____

ii) Mineral required for binding of Gelsolin to Actin is _____

iii) MTOC stands for _____.

iv) Release of milk due to suckling action of baby is Positive feedback mechanism. (True/False).

v) Apical dominance is counter acted by _____.

vi) The principal intracellular cation is Ca^{2+} . (True/False)

vii) Release of milk due to suckling action of baby is Positive feedback mechanism. (True/False).

viii) The Diacyl Glycerol is a membrane bound secondary messenger. (True/False).

Q3. Short Answer type questions (Attempt any TEN)

(10Q X 2M = 20 M)

- I) What are gangliosides. Mention their function
- II) What is MTOC? Mention its role.
- III) Define exocytosis and endocytosis .
- IV) What is flip flop mechanism ? Mention its significance
- V) Define and explain G- actin and F-actin.
- VI) Define "rigor mortis".
- VII) Write 4 characteristic features of secondary messenger.
- VIII) What is the role of Protein kinases.
- IX) What is G- protein. Give its diagrammatic representation.
- X) What is negative feedback mechanism
- XI) Write a short note on functions of ABA.
- XII) Mention 4 functions & Applications of Auxins.

QIV. Long Answer type questions: (Attempt any four)

(04Q x 08M = 32 marks)

1. Write an elaborative note on membrane lipids their types and function.
2. Explain the model proposed by Singer & Nicolson for the Cell Membrane.
3. Describe briefly the structure of microtubule filament and its role.
4. What are intermediate Fibres? how polymerization of intermediate Filaments take place?
5. Explain GPCR mediated pathway with labelled diagram.
6. Write an elaborative note on Significance and major components of cell signalling.
7. Write an explanatory note on Gibberelins as Plant growth regulator and its functions.
8. Write an elaborative note on mechanisms of hormone action.
