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BOTANY

(Major)

Paper : 2.2

(Theory)

(Cell Biology)

Full Marks : 60

Time : 3 hours

The figures in the margin indicate full marks
for the questions

1. Answer the following : 1×7=7

   (a) What is nuclear localization sequence?

   (b) Name a well-studied H^+ driven symporter.

   (c) What are sorting signals?

   (d) What is the function of tRNA?

   (e) What are molecular switches?

   (f) Define prometaphase.

   (g) What is reverse transcriptase?

(*Turn Over*)

2. Answer any *four* of the following :   2×4=8

   (a) Distinguish between phagosome and phagolysosome.

   (b) What are histidine-kinase associated receptors?

   (c) What do you understand by the process called 'flip-flop'?

   (d) What is the role of sigma factor in bacterial RNA polymerase?

   (e) State the differences between heterochromatin and euchromatin.

3. Answer any *three* of the following :   5×3=15

   (a) Discuss the requisites for replication of DNA.

   (b) Explain the different ways in which a cell carries out active transport.

   (c) "The Golgi apparatus is a major collection and dispatch station of protein products received from the endoplasmic reticulum." Explain.

   (d) Explain briefly the mechanism of nuclear import.

   (e) Write a brief note on C-value paradox.

4. Answer any *three* of the following :   10×3=30

   (a) What are ion channels and are they ion-selective? If yes, explain the mechanism involved with the help of suitable figures.   2+8=10

   (b) Discuss the various molecular events that occur at defined stages of the cell cycle.

   (c) Describe the structure and function of salivary gland chromosomes.

   (d) Describe with the help of diagram the fluid mosaic model of plasma membrane. Discuss experimental evidences in support of the fluid mosaic model.   5+5=10

   (e) What are small intracellular mediators? How many classes of cell surface receptor proteins are there? Discuss in detail.   2+8=10

   (f) What are integral transmembrane proteins? Explain the MAP kinase signal transduction pathway.   2+8=10

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