

2016

BOTANY

(Major)

Paper - 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) Why are the DNA strands antiparallel?

(b) What are proteasomes?

(c) Differentiate between mitotic chromosomes and interphase chromosomes.

(d) What are the stages of cell signaling?

(e) What do you understand by apoptosis?

(f) What is the basic structural unit of all biological membranes?

(g) What is the function of peroxisomes?

2. Answer the following : 2×4=8

- (a) State the differences between plant cytokinesis and animal cytokinesis.
- (b) What is spliceosome?
- (c) What is ligand-gated ion channel?
- (d) Distinguish between heterochromatin and euchromatin.

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

- (a) "The transport of macromolecules is controlled by the nuclear pore complexes in a nucleus." Explain.
- (b) Discuss on the receptor-mediated endocytosis.
- (c) Enumerate the differences between Z-DNA and B-DNA.
- (d) Briefly describe the structure and function of Golgi apparatus.
- (e) What is the role of signal recognition particle and its receptor in protein trafficking in eukaryotes?

4. Answer any *three* of the following :

- (a) Define non-genetic RNA. Discuss the structure and synthesis of mRNA. 2+8=10

(3)

- (b) What are the stages of cell cycle? Describe the molecular basis of the control mechanism in the cell cycle. 2+8=10
- (c) What are integral transmembrane proteins? Explain the RTK signal transduction pathway. 2+8=10
- (d) What are the different classes of ion pumps? Discuss the mechanism involved in P-class ion pumps. 2+8=10
- (e) With the help of neat level sketches, discuss the different stages that occurs in meiotic cell division and also state its significance. 8+2=10
- (f) Describe the structure and function of salivary gland chromosomes. 10
