

2016

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) 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 :  $2 \times 4 = 8$

- (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 :  $5 \times 3 = 15$

- (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.  $2 + 8 = 10$

- (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

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