

2014

BOTANY

(Major)

Paper : 2.2

(Cell Biology)

Full Marks : 60

Time : 2½ hours

*The figures in the margin indicate full marks
for the questions*

1. Answer the following : 1×7=7

- (a) What is a unit membrane?
- (b) Of what substances is the nucleolus made?
- (c) Distinguish between synapsis and synizesis.
- (d) State two differences between bacterial and eukaryotic chromosomes.
- (e) What are the functions of Golgi apparatus?
- (f) Why do cells need transport proteins to function?
- (g) What is a liposome?

2. Answer the following :

2×4=8

- (a) Give an account on structure and functions of desmotubules.
- (b) Comment on receptor-mediated endocytosis.
- (c) Write about genetic consequence of meiosis.
- (d) Compare the structure and functions of lysosomes and peroxisomes.

3. Answer any *three* of the following :

5×3=15

- (a) What is heterochromatin? Distinguish between constitutive and facultative heterochromatin with examples.
- (b) State the origin of eukaryotic cell on the basis of endosymbiotic theory.
- (c) What is karyotype concept? State the parameters used in karyotype preparation.
- (d) Describe the double-helical structure of B-DNA. Explain how it differs from Z-DNA.
- (e) Write a brief note on C-value paradox.

(3)

4. Answer any *three* of the following : $10 \times 3 = 30$

- (a) Give an account of chromosome morphology and classify it on the basis of position of centromere. 10
- (b) Describe the structure of nuclear pore complex and discuss the mechanism involved in nucleocytoplasmic transport. $6+4=10$
- (c) Write an essay on the ultrastructure and chemical composition of mitochondria. $5+5=10$
- (d) Enlist pathways of intracellular signal transduction and explain any one. $2+8=10$
- (e) Describe the molecular mechanism of events in M-phase of cell cycle. 10
- (f) Describe the structure and functions of different types of RNA. Discuss with evidences that RNA acts as genetic material. $8+2=10$
