

**3 (Sem-2) BOT M 2**

**2 0 1 4**

**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 )

2. Answer the following :  $2 \times 4 = 8$

- (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 :  $5 \times 3 = 15$

- (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.  $8 + 2 = 10$

\*\*\*