Exam. Code : 210002
Subject Code : 8439

M.Sc. (Botany) Semester—II

BOTC–524 : CELL BIOLOGY

Time Allowed—3 Hours] [Maximum Marks—50

Note :— Section—A : **All** questions are compulsory. Each question will be of **1** mark. Answers should not exceed **4** lines.

Section—B : Attempt any **SEVEN** questions. Each question carrying **3** marks. Each answer should not exceed **2** pages.

Section—C : Attempt any **THREE** questions. Each question carrying **7** marks. Each answer should not exceed **4** pages.

SECTION—A

Answer briefly on the following :

(i) Receptors and their types

(ii) Differentiate between unicellular and multicellular forms of life

(iii) Tread-milling of actin filaments

(iv) Dynamic instability of microtubules

(v) Role of *cyclin* proteins in cell cycle

(vi) Second messengers

(vii) Neurotransmission

(viii) Lysosome's function. 8×1=8

SECTION—B

1. Chloroplast is a semi-autonomous organelle. Why ?
2. Define *Critical Concentration* (Cc). How is it responsible for dynamic behaviour of cytoskeleton ?
3. Discuss with diagram, Fluid-Mosaic Model of bio-membrane.
4. Elucidate in detail the biochemistry of G-protein.
5. Explain with example the two component signalling pathway in plants.
6. What are chromatin proteins ? How are they responsible for DNA replication ?
7. Explain the diversity in protein kinases.
8. What are accessory proteins ? How are they responsible in cell motility ?
9. Define quorum sensing. How is quorum sensing done in bacteria ?
10. Describe various factors responsible for cell cycle regulation.

7 × 3 = 21

SECTION—C

1. Explain multicomponent signal transduction in plants taking phospholipid signalling as an example.
2. Illustrate in detail the various factors responsible for dynamic behaviour of cytoskeleton.

3. Discuss the structure and functioning of MPF.

4. What are the general principles of cell communication ? How haematopoiesis is regulated in cell ?

5. Elucidate the structure and function of various pumps and transporters present on mitochondrial membrane.

$3 \times 7 = 21$