

(i) Printed Pages : 3

Roll No. ....

(ii) Questions : 9

Sub. Code : 

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| 2 | 9 | 7 | 5 |
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Exam. Code : 

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M.Sc. 1<sup>st</sup> Semester

1125

**BIOTECHNOLOGY**

**Paper-MBIO-101 : Cell Biology**

**Time Allowed : Three Hours]**

**[Maximum Marks : 80**

**Note :** Attempt **five** questions in all, by selecting **one** question compulsorily from each Unit. Question No. 1 is compulsory. All questions carry equal marks. Draw neat and well labelled diagrams wherever required.

**1. Compulsory Question :**

- (i) Define the terms magnification, resolution and numerical aperture.
- (ii) Give the function of FACS.
- (iii) What are co-acervates ?
- (iv) What is vesicle budding and fusion ?
- (v) Define Apoptosis. How is it different from ageing ?
- (vi) 'Chloroplast and mitochondria both are energy converters'. Comment.
- (vii) List the different lipids present in plasma membrane.
- (viii) What is plasmodesmata ? Give its significance. 8×2=16

## UNIT-I

2. (a) Discuss the technique required for sample preparation for Electron microscopy.  
(b) Compare and contrast bright field and dark field microscope. 10,6
3. (a) Differentiate a typical prokaryotic cell from eukaryotic cell in cellular organization.  
(b) Discuss the principle of SEM. How is it different from TEM? 10,6

## UNIT-II

4. (a) Discuss the mechanism of Receptor mediated endocytosis giving a suitable example.  
(b) Explain ATPase-dependent Sodium pump. 10,6
5. (a) Describe the different techniques used for sub-cellular fractionation to separate integral proteins from membranes.  
(b) Discuss in detail the ultrastructure of chloroplast. 10,6

## UNIT-III

6. (a) Discuss briefly the signal transduction mechanisms in animals.  
(b) Give the detailed structure of Flagella. How does it differ from Cilia? 10,6
7. (a) Describe the different check points present in the regulation of Cell Cycle.  
(b) Give brief outline of Ras/MAPK pathway. 10,6

## UNIT-IV

8. (a) Describe the mechanism of trafficking of proteins from ER to Golgi apparatus. 10,6
- (b) Discuss the process of oogenesis in animals. 10,6
9. (a) Describe the process of protein synthesis in eukaryotic cells. 10,6
- (b) Differentiate Meiosis-I from Meiosis-II. 10,6

Time Allowed : Three Hours

Maximum Marks : 80

Note : Attempt five questions in all, by selecting one question independently from each Unit. Question No. 1 is compulsory. All questions carry equal marks. Draw neat and well labelled diagrams wherever required.

### Compulsory Question

- (i) Define the terms magnification, resolution and numerical aperture.
- (ii) Give the function of RBC.
- (iii) What are co-repressors?
- (iv) What is sporulation and fusion?
- (v) Define the term phagocytosis. How is it different from pinocytosis?
- (vi) Give the direct and indirect methods of energy conversion.
- (vii) List the different types of proteins in plasma membrane.
- (viii) What is plant cell wall? Give its significance. 2×2=10