Exam.Code:0435
Sub. Code: 3465

1127

M.Sc. (Biotechnology)
First Semester
MBIO-101: Cell Biology

Time allowed: 3 Hours

Max. Marks: 80

NOTE: *Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

Q1. Short answers:

i. What are coacervates?
ii. What are endosomes and lysosomes?
iii. Difference between pinocytosis, endocytosis and exocytosis?
iv. What are COP I and COP II vesicles?
v. What is birefringence in microscopy?
vi. Role of Securin protein in cell cycle?
vii. What are aquaporins?
viii. Which are the major enzymes involved in Kreb's cycle? (8×2)

UNIT-I

Q2. a. Cells are highly diverse in eukaryotic and prokaryotic organisms. Discuss with example and diagrams? 8

b. Describe the principle and working of the microscope used for viewing living unstained cells? 8

Q3. a. Give an account of morphological diversity of eukaryotic cells? 8

b. Discuss the various method of sample preparation for electron microscopy and their importance? 8

UNIT-II

Q4. a. Describe the high throughput method for separating cells on the basis of fluorescence and charge? 8

b. Discuss the structure and function of endoplasmic reticulum? 8

Q5.a. What are P-Class pumps? Describe the Na^+/K^+ pump and its significance in humans? 8

b. Discuss the electron transport chain and production of proton motive force in mitochondria? 8

P.T.O.

UNIT-III

Q6. a. Describe with diagram the molecular events involved in regulation of the cell cycle in *Sacharomyces cerevisiae?* 8

b. Describe the TGF β signalling pathway and its significance in the cell signal transduction? 8

Q7. a. Describe the various check points in cell cycle and how do they regulate the cell cycle? 8

b. Describe the molecular method involved in sliding mechanism of tubulin in flagellar movement? Discuss the various types of cilliary movements 8

UNIT-IV

Q8. a. Explain the vesicle mediated anterograde protein trafficking within the cells? 8

b. Discuss the initiation, extension and termination steps in eukaryotic protein synthesis? 8

Q9. A. Explain oogenesis and mention the proteins involved in it? 6

b. Discuss the mechanism involved in budding and fusion events of vesicles during protein trafficking? 10

x-x-x