Exam.Code:0435
Sub. Code: 3465

2122

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

Time allowed: 3 Hours Max. Marks: 80

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

x-x-x

I. Answer the following:-

a) What is self-assembly and aided assembly?

b) Difference between magnification and resolution with its numerical expression?

c) What are Channel proteins?

d) Role of marker enzymes in subcellular fractionation.

e) Proteasomal degradation.

f) G-proteins?

g) What is retrograde transport?

h) Role of leutinizing hormone and Follicle stimulating hormone? (8x2)

UNIT - I

II. a) Discuss the development of cell theory and the main features of modern cell theory?

b) Give an account of the general organization and morphological diversity of eukaryotic cell? (2x8)

III. a) Describe the principle and working of the fluorescence microscope? Mention its applications in biology?

b) Describe the various methods of sample preparations for Electron microscope? (2x8)

UNIT - II

IV. a) Why is FACS known as the high throughput machine? Discuss with the help of diagram its principle of working?

b) What is active transport? Discuss the mechanism of working of Na^+/K^+ pump? Mention its role in maintaining the ion concentration within the cytoplasm and its significance in medicine? (2x8)

V. a) How does ion channel transport proteins in neuron functioning?

b) Describe the structure and functions of cell wall of plant? (2x8)

UNIT - III

VI. a) How was *Xenopus laevis* used as model system to study the Mitotic Promoting Factor (MPF)?

b) Discuss the exit mechanism from mitosis using *Sacharomyces cerevisiae* as the model system.

c) How is APC guided degradation of mitotic cyclins take place? Explain with diagram?

VII. a) Define signal transduction? Describe the Ras/MAPK pathway in signal transduction?

b) Explain with diagram the molecular mechanism of movement of flagella? (2x8)

UNIT - IV

VIII. a) Discuss the anterograde protein trafficking through ER and Golgi vesicle.

b) Discuss the mechanism of acrosomal reaction during fertoilization? (10,6)

IX. a) Describe the mechanism of vesicle formation and fusion during protein trafficking?

b) Discuss the formation of three germinal layers in humans? (10,6)

x-x-x