(i) Printed Pages : 2 Roll No. .....

(ii) Questions : 9 Sub. Code : 0 9 6 9

Exam. Code : 0 0 3 4

B.Sc. (Hons.) Biotechnology 2nd Semester

1048

CELL BIOLOGY

Paper–BIOT-Sem-II–V-T

Time Allowed : Three Hours] [Maximum Marks : 67

Note :– Attempt **five** questions in all, selecting **two** questions from Section-A and **two** questions from Section-B. Section-C is compulsory. All questions carry equal marks except compulsory question.

SECTION–A

I. (a) Explain in detail the structure of animal cell with suitable diagram and compare it with plant cell.

(b) Explain in brief pre-cellular evolution on earth. 7,6

II. (a) Discuss the structure and function of cell membrane with suitable diagram.

(b) Discuss functions of smooth and rough endoplasmic reticulum. 7,6

III. (a) What are ATPase ? Discuss Sodium-Potassium exchange pump and how it helps in maintaining outside of the cell membrane positively charged.

(b) Explain internalization of macromolecules and particles by phagocytosis and receptor-mediated endocytosis. 7,6

IV. (a) What is passive and active transport ? Explain how ATPase proton pump helps in maintaining pH in the lysosome.

(b) What are permeases ? Explain with suitable examples. 7,6

SECTION–B

V. (a) What are giant chromosomes ? Explain the structure of polytene and lampbrush chromosomes.

(b) What are chromatids ? Classify chromosomes on the basis of their morphology. 7,6

VI. (a) Write a short note on structural organization of nucleosome.

(b) How euchromatin is different from heterochromatin ? 7,6

VII. (a) Differentiate between fetal stem cells and umbilical cord stem cells. Out of these two which one is more useful in stem cell therapy ?

(b) What are the applications of stem cells ? 7,6

VIII. What are the types of adult stem cells ? Discuss key advantages and weakness of adult stem cells. 13

SECTION–C

IX. Explain in brief the following :

(a) The cell theory

(b) PPLO

(c) Lysosome

(d) Nucleolus

(e) Symport and antiport

(f) Centromere

(g) G and R-banding

(h) Totipotent and pleuripotent cell

(i) Umbilical cord stem cell

(j) Chromosome discovery. 10×1.5=15