[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1372 **I**

Unique Paper Code : 3182011102

Name of the Paper : Cell Biology

Name of the Course : **B.Sc. (H) Biomedical Science (UGCF_NEP)**

Semester : I

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all.
3. Give illustrations and examples wherever required.
4. Question No. **1** is compulsory.

P.T.O.

1. (a) Write a short note on the following (**any three**) : (3×3=9)

   (i) SDS

   (ii) Nuclear envelope

   (iii) Golgi apparatus

   (iv) Hurler syndrome

   (b) Differentiate between the following (**any three**) : (3×3=9)

   (i) Prokaryotic cell and eukaryotic cell

   (ii) Desmosomes and hemidesmosomes

   (iii) NLS and NES

   (iv) Mitosis and meiosis

2. (a) Discuss the model of membrane structure as proposed by Singer and Nicolson. How is this model different from earlier models of membrane structure? (10)

   (b) Discuss the term membrane asymmetry and membrane fluidity. Also discuss the experiment performed by Frye and Edidin to prove the mobility of membrane proteins. (8)

3. (a) On what basis we can say that mitochondria and chloroplasts originated from bacteria that were engulfed by the precursor of eukaryotic cells? How are the two organelles different from each other? (10)

   (b) Explain in detail the process of co-translational transport of proteins in the ER. (8)

4. (a) What are the distinguishing features between Gap junctions and plasmodesmata? (9)

   (b) Describe the two types of ER present in the cell. Illustrate any two functions of SER. (9)

5. (a) Discuss the structure, classification, and functions of intermediate filaments. How do they contribute to cellular structural integrity? (9)

   (b) Describe the role of extracellular and intracellular signaling molecules and receptors in cellular communication. Give an example of any extracellular receptor and its mechanisms of action. (9)

6. Write short notes on the following : (6×3=18)

(a) Role of centrioles in cell division.

(b) cAMP as a second messenger in the signal transduction pathway.

(c) Importance of the Gl/S checkpoint in the cell cycle.