

[This question paper contains 4 printed pages.]

Sr. No. of Question Paper : 5799 F Your Roll No.....

Unique Paper Code : 216/223/381

Name of the Paper : Cell Biology-I (CBHT-301)

Name of the Course : **B.Sc. (H.) (Anthropology, Biochemistry, Biological Sciences, Biomedical Sciences, Botany, Micro-biology, Zoology)**

Semester : III

Duration : 3 Hours

Maximum Marks : 75

**Instructions for Candidates**

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt **five** questions in all including Question No. 1 which is compulsory.
3. All the parts of a question must be attempted together.

1. (a) Write the full form of any **five** of the following:

(i) FRET

(ii) MAPs

(iii) NLS

(iv) GFP

(v) STEM

(vi) SRP

(vii) TMV

(1×5=5)

(b) Write the most notable scientific contribution of any **five** of the following:

(i) Stanley Miller

(ii) Claude *et al*

P.T.O.

- (iii) Alan Smith *et al*
  - (iv) Stanley Pruisner
  - (v) Holmes *et al*
  - (vi) Lynn Margulis
  - (vii) Altmann & Cech
  - viii) F. Sanger (1×5=5)
- (c) Name the organelle in which the following enzymes are localized (attempt any five):
- (i) Succinate dehydrogenase
  - (ii) Acid phosphatase
  - iii) Rubisco
  - iv) Glycosyl transferase
  - (v) Catalase
  - (vi) Protein disulfide isomerase (1×5=5)
2. (a) Name the following (attempt any five):
- (i) Simplest amino acid.
  - (ii) The linkage of glucose residue in Cellulose.
  - (iii) The most common lysosomal storage disease.
  - (iv) Sugar present in ATP.
  - (v) The only non-glycerol phospholipid present in cell membranes.
  - (vi) A technique used to analyze 3-dimensional structure of proteins. (2×5=10)

(b) Attempt **any two** of the following:

- (i) Explain the principle, outline of the method and uses of cell fractionation.
- (ii) Describe the nucleo-cytoplasmic exchange through the Nuclear Pore Complex.
- (iii) Outline the mechanism of protein folding and processing. ( $2\frac{1}{2} \times 2 = 5$ )

3. Differentiate between **any five** of the following (list **three** important differences):

- (i)  $\alpha$ -helix and  $\beta$ -pleated sheet structure of proteins
- (ii) Confocal and phase contrast microscopy
- (iii) Paper and thin layer chromatography
- (iv) Cis and trans face of Golgi apparatus
- (v) Viroids and Prions
- (vi) Microtubules and microfilaments (3×5=15)

4. (a) Define **any five** of the following:

- (i) Flippase
- (ii) Plasmalogens
- (iii) Resolving power
- (iv) Kinesins
- (v) Endosomes
- (vi) Retroviruses (1×5=5)

(b) (i) What are different types of coated vesicles? How do they carry out protein sorting and transport? (5)

(ii) What is the role of porins in mitochondria? (2)

(iii) Draw a well labelled diagram of ultrastructure of mitochondria. (3)

5. Explain **any five** of the following:

- (a) NOR and biogenesis of rRNA
- (b) Mechanism of protein folding and processing in ER
- (c) Glyoxysomes
- (d) Transmembrane proteins
- (e) High Performance Liquid Chromatography
- (f) Nucleosome (3×5=15)

6. Write short notes on **any three** of the following:

- (a) Fluorescence microscopy
- (b) Import of proteins into the mitochondrial matrix
- (c) Peroxisome assembly
- (d) Semigenetic autonomy of mitochondria (5×3=15)