2025

BOTANY

Paper : BOTMAJ2014

(Biomolecules and Cell Biology)

Full Marks : 50

Pass Marks : 20

Time : Two hours

The figures in the margin indicate full marks for the questions.

1. Choose the correct answer from the following : 1×5=5

   (a) Benedict's and Fehling's Test is used for

   (i) To detect Reducing sugar

   (ii) To detect Non-reducing sugar

   (iii) To detect proteins

   (iv) To detect all Carbohydrates

(b)   Haemocytometer is used for

(i)   Measurement of cell size

(ii)   Counting of cells

(iii) Dissection of cell

(iv)   Measurement of cell organelles

(c)   Which of the following organelles is not part of the endomembrane system

(i)   Peroxisome

(ii)   Nucleus

(iii) Golgi bodies

(iv)   ER

(d)   Sorting of proteins occurs in

(i)   ER

(ii)   Mitochondria

(iii) Ribosome

(iv)   Golgi Apparatus

(e)   The pH of pure water is

(i)   6

(ii)   7

(iii) 9

(iv)   10

2. Answer the followings questions : *(any five)*

2×5=10

(a) Define endergonic and exergonic reaction citing examples.

(b) Why is water called the "Universal solvent" ?

(c) Write two functions of the endomembrane system in eukaryotic cells.

(d) Draw the structure of deoxyribose sugar.

(e) Differentiate between the coenzymes and prosthetic groups.

(f) What are reducing and non–reducing sugars ?

(g) Mention two properties of Quiescent phase of cell cycle ?

3. Answer *any five* of the following questions :

5×5=25

(a) Describe briefly the characteristic features of Prokaryotic cell.

(b) Write a brief note on significance of Buffers in Biological system.

(c) With a neat labelled diagram discuss the structure of plant cell wall.

(d) Discuss the "lock and key"– hypothesis of enzyme action.

(e) What is a passive membrane transport? Discuss the different types of passive membrane transport.

$1+4=5$

(f) Discuss the different phases of eukaryotic cell cycle with suitable diagram.

(g) "Sugars play important role in Genetic information". Justify the statement.

(h) Explain briefly the importance of autophagy in cell defense system.

4. Answer *any one* of the following questions:

$10 \times 1 = 10$

(a) Describe with neat labelled diagram of the structures and function of Endoplasmic Reticulum. $7+3=10$

(b) What is a polypeptide chain? Draw and describe the primary structural features of polypeptide chain. $2+8=10$

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