

Sl. No. of Ques. Paper : 1772

GC-3

Unique Paper Code : 32161102

Name of Paper : Biomolecules and Cell Biology

Name of Course : B.Sc. (Hons.) Botany (CBCS)

Semester : I

Duration : 3 hours

Maximum Marks : 75

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt five questions in all, including Question No. 1 which is compulsory.

All parts of a question must be attempted together.

1. (a) Define (any five):

- (i) Nucleolus
- (ii) Endocytosis
- (iii) Isomers
- (iv) Buffers
- (v) van der Waals' interactions
- (vi) Cyclins.

1×5=5

(b) Match the following:

- | A                                      | B                   |
|--|---------------------|
| (i) Mitosis                            | (a) Rudolf Virchow  |
| (ii) Cell arise from pre-existing cell | (b) de Duve         |
| (iii) Existence of nucleus             | (c) Carl Benda      |
| (iv) Discovery of lysosome             | (d) Walter Flemming |
| (v) Mitochondria                       | (e) Robert Brown    |

1×5=5

(c) Give one important function of each of the following (any five):

- (i) Lysosomes
- (ii) Kinetochores
- (iii) Peroxisomes
- (iv) tRNA
- (v) Microtubules
- (vi) Ribosome.

1×5=5  
P. T. O.

2. Differentiate between the following (any *five*):
- (a) Prokaryotic and eukaryotic cell
  - (b) Endocytosis and exocytosis
  - (c) Coupled and redox reaction
  - (d) Apoenzyme and co-enzyme
  - (e) Mitosis and meiosis
  - (f) Heterochromatin and euchromatin. 3×5=15
3. Draw well labelled diagram of the following (any *three*):
- (a) Ultrastructure of chloroplast
  - (b) Structure of mature *t*RNA
  - (c) Double helical structure of DNA
  - (d) Nuclear pore complex. 5×3=15
4. Write short notes on the following (any *three*):
- (a) Diseases associated with lysosomes
  - (b) Steroids
  - (c) Properties of water that allow it to support living organisms
  - (d) Origin of eukaryotic cell on the basis of endosymbiotic theory. 5×3=15
5. Attempt the following (any *three*):
- (a) Discuss the structure and functions of microtubules
  - (b) Explain in detail the structure and functions of mitochondria
  - (c) Why is ATP considered a high energy molecule? Explain.
  - (d) Describe the various levels of protein structure. 5×3=15
6. (a) Discuss the role of endoplasmic reticulum in folding, processing and quality control of proteins.
- (b) Explain the mechanism of enzyme action with the help of various theories/hypotheses. 7½×2=15