

2020

**BIOCHEMISTRY — HONOURS**

**Paper : CC-7**

**Full Marks : 50**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

1. Answer **any five** questions from the following : 2×5
- (a) Mention the differences between archaea and eubacteria.
  - (b) What are desmosomes?
  - (c) Why do cells go to G<sub>0</sub> phase of cell cycle?
  - (d) What are microfilaments?
  - (e) What is the function of immersion oil in using a microscope?
  - (f) What is leader sequence? Give an example.
  - (g) Differentiate between protoplast and spheroplast.
  - (h) What is Zellweger syndrome?
  - (i) Mention the advantages of electron microscope over light microscope.
  - (j) What are focal adhesions?
2. Answer **any two** questions :
- (a) Describe the structure of nuclear pore complex. How does it help in bidirectional trafficking of cargo between cytosol and nucleus? 2+3
  - (b) What is the full form of FACS? Mention an use of it. Justify your answer. 2+1+2
  - (c) What are the major differences between cilia and flagella? Name the organelles where extrachromosomal DNA is found. 3+2
  - (d) Briefly describe different types of coated vesicles. Name one fluorochrome that you can use for visualising DNA by confocal microscopy. Name a protein needed for vesicle fusion. 3+1+1

**Unit - I**

Answer **any one** question.

3. (a) Mention the structural and functional dissimilarities between mitochondria and peroxisome.
- (b) How do chloroplasts structurally resemble cyanobacteria?
- (c) What are the major functions of lysosome?
- (d) What is the major advantage of confocal microscopy over fluorescence microscopy? 3+3+2+2

**Please Turn Over**

4. (a) Mention two similarities between Chloroplast and Mitochondria.  
(b) What is thylakoid? What are the major functions of thylakoid?  
(c) Mention the differences between SEM and TEM.  
(d) What are porins? 2+(1+2)+3+2

**Unit - II**

Answer *any one* question.

5. (a) What are cell junctions? Mention the different types of cell junctions found in animal cells.  
(b) What are the major functions of actin filament?  
(c) How does the structure of Gram-positive bacterial cell wall differs from that of Gram-negative bacterial cell wall? Name an enzyme that can lyse bacterial cell wall. (1+3)+2+(3+1)
6. (a) Differentiate between  $\alpha$  and  $\beta$  tubulin. Name an intermediate filament.  
(b) What are the functions of plasmodesmata?  
(c) Mention the major differences between primary and secondary cell wall of plants.  
(d) Where do you find cell matrix? Name two components of it. (2+1)+2+2+(1+2)

**Unit - III**

Answer *any one* question.

7. (a) What is interphase of eukaryotic cell cycle?  
(b) What is SER? Give an example of its function.  
(c) What do you mean by co-translational translocation of protein? Name the organelles where co-translational translocation of protein occurs.  
(d) How do lysosomal proteins sorted in the Golgi apparatus? 3+(1+1)+(2+1)+2
8. (a) What is protein sorting? Schematically represent the secretory pathway for protein sorting.  
(b) Differentiate between karyokinesis and cytokinesis.  
(c) Give a schematic layout of cell cycle showing the checkpoints. (2+3)+2+3
-