

B.Sc. BIOTECHNOLOGY
First Semester
Cell Biology
(BBT - 03)

Duration: 3Hrs.

Full Marks: 70

(PART-B: Descriptive)

Duration: 2 hrs. 40 mins.

Marks: 50

1. Write short notes on- (any five)

2×5=10

- a) Nucleoid
- b) Symport
- c) Endoplasmic reticulum
- d) Chromatin
- e) Microfilaments
- f) Cell theory
- g) Causes of apoptosis

2. Answer the following questions-(any five)

- a) What do you mean by prokaryotes? Differentiate between prokaryotes and eukaryotes. **1+2=3**
- b) What is fluid mosaic nature of plasma membrane? Explain with a suitable model. **3**
- c) Draw a typical microtubule. What is the chemical composition of a microtubule? **2+1=3**
- d) What do you mean by nucleoplasm? What are the constituents of nucleoplasm? **1+2=3**
- e) Draw the structure of chloroplasts. Mention the important function of chloroplasts. **2+1=3**
- f) What do you mean by extracellular matrix? What are the different types of fibrous proteins found in extracellular matrix? **1+2=3**
- g) What are the characteristics of cancer cells? **3**

3. Answer the following questions: (any five)

- a) What do you mean by mitotic cell division? Explain the different stages of mitosis with suitable diagram. **1+4=5**
- b) What is passive transport? Explain the process of facilitated diffusion in details. **1+4=5**
- c) Draw the structure of mitochondria. Explain oxidative phosphorylation. **2+3=5**
- d) What do you mean by eukaryotic cells? Explain the typical structure of an animal cell with a suitable diagram. **1+4=5**
- e) What do you mean by nuclear envelope? Explain the transport mechanism across the nuclear envelope mentioning the important proteins involved in the process.
- f) What is a lysosome? Explain its structure and function. **1+**
- g) What do you mean by cell cycle? Explain the various checkpoints of cell cycle with suitable diagram. **1+4=5**

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(The figures in the margin indicate full marks for the questions)

Duration: 20 minutes

Marks – 20

PART A- Objective Type

(Figure in the margin indicates Full marks of the question)

Choose the correct answer from the following option: -

1×20= 20

1) Cell theory was put forward by-

- | | |
|--------------------------|-----------------------|
| a) Schleiden and Schwann | b) Sutton and Boveri |
| c) Watson and Crick | d) Darwin and Wallace |

2) Nucleus was discovered by-

- | | |
|-----------------|--------------------------|
| a) Robert brown | b) Leuwenhoek |
| c) Robert Hooke | d) Schleiden and Schwann |

3) Largest animal cell is that of-

- | | | | |
|------------|----------|---------|--------|
| a) Ostrich | b) Human | c) Duck | d) Hen |
|------------|----------|---------|--------|

4) The membrane of vacuole is known as-

- | | | | |
|--------------|----------------|------------|-----------|
| a) Tonoplast | b) Kariyotheca | c) Cristae | d) Matrix |
|--------------|----------------|------------|-----------|

5) Which deficiency is associated with elastin fibre deficiency in ECM?

- | | |
|--------------------------|---------------------|
| a) Williams syndrome | b) Down's syndrome |
| c) Klinefelters syndrome | d) Turners syndrome |

6) Basic unit of life is-

- | | | | |
|-----------|-----------|---------|----------|
| a) Tissue | b) Organs | c) Cell | d) Blood |
|-----------|-----------|---------|----------|

7) How many types of Intermediate filaments are present?

- | | | | |
|------|------|------|------|
| a) 3 | b) 2 | c) 4 | d) 5 |
|------|------|------|------|

8) Which organelle is called the power house of the cell?

- | | | | |
|----------------|-----------------|-------------|-------------|
| a) Chloroplast | b) Mitochondria | c) Lysosome | d) Ribosome |
|----------------|-----------------|-------------|-------------|

- 9) Endoplasmic reticulum occurs in the form of-
- a) Vesicles b) Cisternae c) Tubules d) All of the above
- 10) The chemical component of a microtubule is-
- a) Actin b) Tubulin c) Desmin d) Myosin
- 11) Bacteria with tuft of flagella at one end is-
- a) Monotrichous b) Lophotrichous c) Peritrichous d) Atrichous
- 12) Outer membrane is present in-
- a) Gram +ve bacterial cells b) Gram -ve bacterial cells
- c) Both d) None
- 13) The concept of unit membrane was proposed by-
- a) Davson b) Robertson c) Overton d) Gorter
- 14) Cell membrane is composed of-
- a) Protein and amino acids b) Lipids and proteins
- c) Lipids and carbohydrate d) Protein and carbohydrate
- 15) Chromosomes having equal arms are called-
- a) Metacentric b) Polycentric c) Acentric d) Acrocentric
- 16) Chiasmata is formed during-
- a) Mitosis b) Mitosis I c) Meiosis I d) Meiosis II
- 17) During Antiport transport system across the plasma membrane substances-
- a) Pass along the same direction b) Pass along opposite direction
- c) Can move in any direction d) Remain static
- 18) Programme cell death is known as-
- a) Apoptosis b) Necrosis c) Phagocytosis d) Pinocytosis
- 19) Plasmid is found in-
- a) Protozoa b) Bacteria c) Plant cells d) Viruses
- 20) Periplasmic space is present between-
- a) Plasma membrane and cell wall b) Cell wall and capsule
- c) Inner membrane and outer membrane d) Plasma membrane and nucleoid
