

(A-44)

**SARDAR PATEL UNIVERSITY****B. Sc. (Biochemistry) – Fifth Semester Examination (CBCS)**

Thursday, 12-04-2018

2:00 p.m. to 5:00 p.m.

**US05CBCH04: Cell Biology****Total Marks: 70**

Note: (1) Figures to the right indicate marks.

(2) Draw a neat and labeled diagram, wherever necessary.

**Q. 1 Choose the most appropriate answer from the four alternatives given: [10]**

- i. Mitochondria and plastids have a double membrane envelope surrounding the \_\_\_\_\_.  
 (a) DNA (b) Cytoplasm (c) Chromosomes (d) Ribosomes
- ii. Contractile vacuoles pump out \_\_\_\_\_.  
 (a) Excess water (b) Intra water (c) Waste (d) Sodium
- iii. Which of the following cells are organized in to complex internal structure and cytoskeleton?  
 (a) Virus (b) Eukaryotic (c) Bacterial (d) Prokaryotic
- iv. Microtubule dimer consist of \_\_\_\_\_.  
 (a) Actin and  $\beta$ - tubulin (b) Actin and intermediate filament  
 (c)  $\alpha$ - tubulin and  $\beta$ - tubulin (d) Intermediate filament and  $\beta$ - tubulin
- v. During mitosis, the centrioles replicate and produce \_\_\_\_\_.  
 (a) Actin filament (b) Myosin filament (c) Intermediate filament (d) DNA
- vi. \_\_\_\_\_ facilitate communication between the nucleus and the cytoplasm.  
 (a) Basal granule (b) Cytosol (c) Kinetosome (d) Pores
- vii. Proteasome recognizes proteins destined for destruction and are coupled to \_\_\_\_\_.  
 (a) Ubiquitin molecule (b) Protein (c) Carbohydrate (d) Phospholipids
- viii. Haploid cell in animal include \_\_\_\_\_.  
 (a) Liver cell (b) Sperm cell (c) Nerve cell (d) Muscle cell
- ix. Cell cycle in animals are controlled by \_\_\_\_\_.  
 (a) Cyclin (b) Cyclin dependent kinases (c) Both (a) and (b) (d) Replication
- x. Match the following and choose correct answer from the codes given below:
- |             |                     |
|-------------|---------------------|
| A. Keratin  | 1. Cell nuclei      |
| B. Vimentin | 2. Nerve cell       |
| C. Desmin   | 3. Epithelial cell  |
| D. Lamins   | 4. Muscle cell      |
|             | 5. Mesenchymal cell |
- |     |   |   |   |   |
|-----|---|---|---|---|
|     | A | B | C | D |
| (a) | 1 | 2 | 3 | 4 |
| (b) | 2 | 4 | 1 | 3 |
| (c) | 3 | 5 | 4 | 1 |
| (d) | 4 | 3 | 1 | 2 |

**P.T.O.**

- Q.2** Answer any **TEN** from the following: [20]
1. State the evidence for the endosymbiont theory.
  2. Why gene expression contribute simplicity to the prokaryotes as compared to eukaryotes?
  3. Define the term protein signature.
  4. What is Treadmilling?
  5. Differentiate between flagella and cilia.
  6. What are the basal bodies?
  7. What are peroxisomes.
  8. Define autophagy.
  9. What is lipofuscin?
  10. Differentiate between mitosis and meiosis.
  11. How caspases works during intrinsic pathway of apoptosis.
  12. Give a labelled diagram of cell cycle.
- Q.3** (a) Write differences between animal and plant cells. [5]  
(b) Write a note on cell junctions. [5]
- OR**
- Q.3** (a) Describe fluid mosaic model of cell membrane. [5]  
(b) Discuss transport mechanisms of the cell. [5]
- Q.4** (a) Write main components and functions of microfilaments. [5]  
(b) Write a note on eukaryotic cilia. [5]
- OR**
- Q.4** (a) Discuss functions of microtubules. [5]  
(b) Write a detail note on intermediate filaments. [5]
- Q.5** (a) Classify ER. Describe its structures and functions. [6]  
(b) Draw labelled structure of cell's power house. [4]
- OR**
- Q.5** (a) Discuss transmembrane trafficking. [6]  
(b) Draw labelled structure of photosynthetic organelle of the cell. [4]
- Q.6** Discuss stem cells and their importance. [10]
- OR**
- Q.6** Describe various phases of mitosis. [10]

\*\*\*X\*\*\*