

(14/A-4)

SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

**Sardar Patel University**

**B.Sc Biotechnology Fifth Semester**

**Saturday, 3<sup>rd</sup> November 2018**

**10:00 am to 1:00 pm**

**US05CBIT06 (Cell Biology)**

**Total Marks: 70**

Note: Figures to the right indicates marks.

**Q.I Multiple Choice Questions**

**[10]**

- 1) Which of the following statement is true regarding the surface tension of plasma membrane?
  - a. Surface tension of plasma membrane is more than pure lipid
  - b. Surface tension of plasma membrane pure lipid are same
  - c. Surface tension of plasma membrane is less than pure lipid
  - d. Plasma membrane do not have surface tension
- 2) The main role of carbohydrates in the cell membrane is \_\_\_\_\_.
  - a. Adhesion
  - b. Recognition
  - c. Locomotion
  - d. Reception
- 3) The fluidity of plasma membrane increase with \_\_\_\_\_.
  - a. Increase in saturated fatty acid in the membrane
  - b. Increase in unsaturated fatty acid in the membrane
  - c. Increase in phospholipids content in the membrane
  - d. Increase in glycolipid content in the membrane
- 4) Which of the following is an invagination of the muscle cells sarcolemma?
  - a. Cisternae
  - b. Microtubules
  - c. T- tubules
  - d. Sarcoplasmic reticula
- 5) Which of the following is the most heterogeneous type of cytoskeletal filament?
  - a. Microtubules
  - b. Microfilaments
  - c. Intermediate filaments
  - d. None of these
- 6) \_\_\_\_\_ catalyzes the synthesis of cAMP from ATP.
  - a. Adenylyl isomerase
  - b. Adenylyl cyclase
  - c. Adenylyl epimerase
  - d. Adenylyl transferase
- 7) When a signal is present continuously and above a certain threshold level, receptor system results in \_\_\_\_\_.
  - a. Adaptation
  - b. Desensitization
  - c. Integration
  - d. a and b both
- 8) Raf-I, MEK, ERK are the examples of \_\_\_\_\_.
  - a. MAPK family
  - b. SH2 domain
  - c. SH3 domain
  - d. None of these
- 9) Which of the following is the target of caspases?
  - a. FAK
  - b. Lamins
  - c. Proteins of cytoskeleton
  - d. All of these
- 10) \_\_\_\_\_ is the cancer of connective tissue.
  - a. Sarcoma
  - b. Carcinoma
  - c. Myeloma
  - d. Lymphoma

(P.T.O)

**Q.II Answer the following questions (attempt any TEN) [20]**

- a) Give the difference between active transport and passive transport.
- b) What is the role of cholesterol in plasma membrane?
- c) What is glycocalyx? Give its functions.
- d) Sketch and label Myosin II.
- e) What are MTOCs?
- f) Define cytoskeleton. Give its basic functions.
- g) Write the role of PKA and MAPK in Biosignaling.
- h) Enlist basic signalling mechanisms.
- i) What are the basic differences in mechanism of G-protein coupled receptor and receptor tyrosine kinase.
- j) Write down the orderly process of apoptotic cell.
- k) Give the different causes of cancer.
- l) Write the basic difference between benign and malignant tumor.

**Q.III a) Give the role of carbohydrates in plasma membrane. [05]**  
**b) Write a note on Na<sup>+</sup>/K<sup>+</sup> ATPase pump. [05]**

**OR**

**Q.III a) Give the functions of plasma membrane. [05]**  
**b) Write a note on membrane fluidity. [05]**

**Q.IV a) How assembly and disassembly of Microtubules occurs? [05]**  
**b) Write a note on intermediate filament. [05]**

**OR**

**Q.IV What are motor proteins? Explain the structure and functions of Kinesin and dyenin. [10]**

**Q.V Explain the activation of glycogen synthesis by insulin in detail. [10]**

**OR**

**Q.V a) Write a note on JAK-STAT pathway. [06]**  
**b) Describe the activation of cAMP dependent protein kinases. [04]**

**Q.VI a) Give a note on Tumor suppressor genes and oncogenes. [06]**  
**b) Enlist the types of cancer and describe the basic properties of cancer cells. [04]**

**OR**

**Q.VI a) Explain extrinsic pathway of apoptosis. [07]**  
**b) Write a brief note on caspases. [03]**

— X —

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(P.T.O.)