

- N.B.:** (1) All questions are compulsory  
(2) All questions carry equal marks  
(3) Draw neat, labelled diagrams wherever necessary

Q1. a. Give one example of **any three** of the following (03)

- i. Motor protein associated with Microfilaments.
- ii. Non-muscle motility
- iii. Drug affecting Microtubules.
- iv. Gaseous extracellular messenger
- v. Effector
- vi. Calcium binding protein

Q1. b. Give an account of **any two** of the following (12)

- i. Structural features of Microtubules
- ii. Actin Binding Proteins
- iii. General pathway of signal transduction.
- iv. Role of G proteins in signal transduction.

Q2. a. Define **any three** of the following (03)

- i. Caspases
- ii. Tight junctions
- iii. EC gradient
- iv. Glycocalyx
- v. Death domain
- vi. GAGs

Q2. b. Attempt **any two** of the following (12)

- i. Give the significance of apoptosis.
- ii. What are microvilli? State their role in the cell.
- iii. Explain the process of passive transport of molecules across the cell membrane.
- iv. Explain the different types of carrier proteins using suitable examples.

Q3. a. Explain **any one** of the following (02)

- i. Thermostats
- ii. CO<sub>2</sub> incubator

Q3 b. Name **any one** of the following (01)

- i. A process where differentiated cells lose their specialized properties in vitro.
- ii. The material used to initiate primary tissue culture.

Q3 c. Discuss **any two** of the following (12)

- i. Types of biosafety cabinets.
- ii. Principle and working of an autoclave.
- iii. Advantages of animal tissue culture.
- iv. The various pipetting devices used in animal tissue culture laboratory.

Q4. a. Give significance of **any three** of the following (03)

- i. Collagenase
- ii. DMEM
- iii. Antibiotics
- iv. Mouse fibroblast Feeder layer
- v. Conditioned media
- vi. Carcinoma Stem cells

Q4 b. Answer **any two** of the following (12)

- i. State the physicochemical conditions required for the animal tissues to grow in ATC media .
- ii. Discuss disadvantages of serum in animal tissue culture media.
- iii. Give the biological characteristics of EG and ES cell lines.
- iv. Give an account of complete media and its advantages.

Q5. Write short note on **any three** of the following (15)

- i. Types of tissue culture vessels
- ii. Fluid mosaic model
- iii. Intrinsic pathway of apoptosis
- iv. Therapeutic cloning and its importance
- v. Balanced salt solutions and their application
- vi. Types of Intermediate filaments.

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