

**B.Sc. BIOTECHNOLOGY  
SIXTH SEMESTER  
ANIMAL BIOTECHNOLOGY  
BBT-604**



[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

**( Objective )**

**1 × 20 = 20**

**Choose the correct answer from the following:**

- Which ion requires for cell adhesion?
  - Ca<sup>2+</sup>
  - Na<sup>+</sup>
  - Mg<sup>2+</sup>
  - None of these
- Which ion requires for regulate membrane potential?
  - Na<sup>+</sup>
  - Cl<sup>-</sup>
  - K<sup>+</sup>
  - All of these
- The growth of animal cells in vitro in a suitable culture medium is called.....
  - Animal cell culture
  - Plant tissue culture
  - Gene expression
  - Transgenesis
- Which of the following are the characteristics of a normal cell?
  - Continuous cell lines
  - No contact inhibition
  - Dependent on external growth factor
  - Anchorage independent
- Which of the following is a type of animal cell culture technique?
  - PCR
  - Gel electrophoresis
  - Monolayer culture
  - Western blotting
- Which type of animal cells can be cultured?
  - Only bird cells
  - Only mammalian cells
  - Only human cells
  - A wide range of animal cells
- Which of the following is NOT a growth factor?
  - PDGF
  - KGF
  - FGF
  - IGF-1
- Which of the following is a most commonly added protein in Serum-free media?
  - BSA
  - SAB
  - BAS
  - All of these
- Which of the following are the culture vessels?
  - Multiwall plate
  - Flasks
  - Petridis
  - All of these
- Which of the following are used for monoclonal antibodies productions?
  - Recombinant mammalian cells
  - Mutated mammalian cells
  - Normal mammalian cells
  - All of these

11. Which buffer is used in animal cell culture?
  - a. HEPES
  - b. KEPES
  - c. NEPES
  - d. All of these
12. Which ion requires for cell proliferation and differentiation?
  - a.  $\text{Ca}^{2+}$
  - b.  $\text{Cl}^-$
  - c.  $\text{Na}^+$
  - d. None of these
13. Which is preferred in cell culture as energy source?
  - a. Glucose
  - b. Sucrose
  - c. Glutamine
  - d. All of these
14. What is a cell line?
  - a. Multilayer culture
  - b. Transformed cells
  - c. Sub culturing of primary culture
  - d. Multiple growth of cells
15. Which of the following is not a basic requirement for animal cell culture?
  - a. Uncontrolled temperature and pH
  - b. Sterile environment
  - c. Appropriate growth medium
  - d. Adequate oxygen and carbon dioxide levels
16. MCF-7 cell line originated from the tissue:
  - a. Human Hepatoma
  - b. Human Breast tumor
  - c. Cervical carcinoma
  - d. None of these
17. Which potential application of animal cell culture involves the production of human tissues for transplantation?
  - a. Vaccine production
  - b. Basic research
  - c. Tissue engineering
  - d. Drug discovery and development
18. Which are the major constituents of the serum?
  - a. Cholesterol
  - b. Vitamin A
  - c. Lactic acid
  - d. All of these
19. Cell line derived by selection or cloning is referred to as:
  - a. Cell clone
  - b. Cell cluster
  - c. Cell strain
  - d. All of these
20. Which of the following are the routes of contaminations?
  - a. Cell lines
  - b. Pipettes
  - c. LAF
  - d. All of these

-- --- --

**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

- |  |        |
|--|--------|
| 1. What is primary cell culture? Emphasize on Enzymatic disaggregation of primary cell culture techniques.         | 2+8=10 |
| 2. Discuss details about Embryonic stem cell engineering. Add on its applications, limitations and ethical issues. | 6+4=10 |
| 3. Write short notes on:<br>a) Microinjection method of gene transfer<br>b) Embryonic stem cell method             | 5+5=10 |
| 4. Describe details on facilities required for Animal cell culture.  | 10     |
| 5. What is medium and its types? Elaborate the physicochemical properties of culture media.                        | 3+7=10 |
| 6. What are cell lines and types? Add on the selection and maintenance of cell lines.                              | 10     |
| 7. Write short notes on:<br>a) Serum<br>b) Development of serum free medium  | 5+5=10 |
| 8. Write short notes on:<br>a) Monolayer culture<br>b) Human mouse   | 5+5=10 |

= = \*\*\* = =