

**B.Sc. BIOTECHNOLOGY
FOURTH SEMESTER
ANIMAL BIOTECHNOLOGY
BBT-402**

(Use separate answer scripts for Objective & Descriptive)

Duration: 3 hrs.

Full Marks: 70

(PART-A: Objective)

Time: 20 min.

Marks: 20

Choose the correct answer from the following:

1X20=20

1. Which of the following are commonly produced in animal cell cultures?
 - a. Interferon
 - b. Vaccines
 - c. Monoclonal antibodies
 - d. All of these
2. The first vaccine developed from animal cell culture was
 - a. Polio
 - b. Influenza vaccine
 - c. Hepatitis B vaccine
 - d. Small pox vaccine
3. Disaggregating of cells can be achieved by
 - a. Physical disruption
 - b. Treatment with chelating agents
 - c. Enzymatic digestion
 - d. All of these
4. Accumulation of lactate leads to
 - a. Increase in pH
 - b. No change in pH
 - c. Reduction in the pH of culture hence loss of cell viability
 - d. No loss of cell viability
5. Excess CO₂ suppress cell growth and productivity by
 - a. Inhibiting respiration
 - b. Altering intracellular pH by diffusing across the cell membrane
 - c. Both (a) and (b)
 - d. Altering pH of the medium
6. What is the concentration of CO₂ required for culturing animal cells?
 - a. 2-5%
 - b. 1-10%
 - c. 10-15%
 - d. 15-20%
7. pH of the culture medium is initially controlled by
 - a. Presence of CO₂
 - b. Presence of bicarbonate buffer
 - c. Addition of bases
 - d. None of these
8. Hybridoma cells have an application to produce:
 - a. Antigens
 - b. Antibodies
 - c. Cancer cells
 - d. Cell lines
9. Cells which have undergone transformation frequently become
 - a. Anchorage independent
 - b. Anchorage dependent
 - c. Stable
 - d. Unstable
10. Cybrids are produced by

- a. Fusion of two different nuclei from two different species
- b. Fusion of two same nuclei from same species
- c. The nucleus of one species but cytoplasm from both the parent species
- d. None of the above

11. The introduced DNA in an organism is known as.....
 - a. External gene
 - b. Extra gene
 - c. Transgene
 - d. Parental gene
12. Lactoferrin has the ability to bindmolecule.
 - a. Iron
 - b. Calcium
 - c. Magnesium
 - d. Potassium
13. 5 to 7 days after fertilization, the blastocyst is a ball of aboutstem cells.
 - a. 90
 - b. 100
 - c. 70
 - d. 80
14. Incloning a genetic copy of an existing organism is produced.
 - a. Reproductive
 - b. Therapeutic
 - c. Normal
 - d. Abnormal
15. President Obama signs an Executive Order for stem cells in the year.....
 - a. 2005
 - b. 2007
 - c. 2003
 - d. 2009
16. Unspecialized cells are also known as.....cells.
 - a. Blank
 - b. Empty
 - c. Home
 - d. Work
17. Cells from early (1-3 days) embryos will develop into.....cells.
 - a. Pluripotent
 - b. Multipotent
 - c. Totipotent
 - d. Normal
18. Wharton's Jelly is also known as
 - a. Umbilical cord mother cells
 - b. Umbilical cord generative cells
 - c. Umbilical cord white cells
 - d. Umbilical cord stem cells
19. Transgenic organisms are also known asorganisms.
 - a. Recombinant
 - b. Advanced
 - c. Fertile
 - d. None of the above
20. Treatment in which stem cells are changed into the specific cell type required to repair damaged or destroyed cells or tissues are
 - a. Culture based therapies
 - b. Animal based therapy
 - c. Tissue based therapies
 - d. Cell based therapies

(PART-B: Descriptive)

Time: 2 hrs. 40 min.

Marks: 50

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

1. What do you mean by stem cell? Explain the types in detail. 3+7=10
2. Explain the method of production of embryonic stem cells. 10
3. What is a transgenic animal? Explain the significance giving some examples. 3+7=10
4. Discuss the various equipments required in a cell culture laboratory. 10
5. How many categories of cell lines are available? Discuss the advantages and disadvantages of animal cell culture. 5+5=10
6. What is a cell culture medium? Discuss the various types of cell culture media. 2+8=10
7. What is primary cell culture? What criteria must be considered for efficient development of primary cultures? Discuss the various parameters required while optimization of cell culture media. 2+3+5=10
8. Write short notes *any two*: 5×2=10
 - a. The negative side of stem cell
 - b. Biosafety levels
 - c. Blastocyst

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