# B.Sc. BIOTECHNOLOGY
## FOURTH SEMESTER (REPEAT)
## ANIMAL BIOTECHNOLOGY
## BBT-403

(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 $CO_2$ 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 $CO_2$ 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 $CO_2$
   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 on 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 bind .....molecule.
a. Iron
b. Calcium
c. Magnesium
d. Potassium

13. 5 to 7 days after fertilization, the blastocyst is a ball of about .....stem cells.
a. 90
b. 100
c. 70
d. 80

14. In .....cloning 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 as .....organisms.
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

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## ( 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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