



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY**

THIRD SEMESTER – NOVEMBER 2017

**16PBT3MC01 - ANIMAL BIOTECHNOLOGY**

Date: 01-11-2017  
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

**PART – A**

**Answer ALL the Questions**

**I. Choose the correct answer**

**(5 x 1 = 5 Marks)**

- \_\_\_\_\_, a pioneer in Animal Cell Culture, cultured frog nerve cells by the 'hanging drop' technique over century ago.  
a) Harrison                      b) Carrel                      c) Roux                      d) Lewis
- Hoechst staining* is commonly employed to detect \_\_\_\_\_ contamination in animal cell culture.  
a) bacterial                      b) fungal                      c) mycoplasma                      d) prion
- Claudia Castillo was transplanted with the first tissue-engineered \_\_\_\_\_ utilising her own stem cells.  
a) trachea                      b) uterus                      c) bladder                      d) lung
- GLUT4* knockout mice were designed as a model system to understand\_\_\_\_\_.  
a) Type II Diabetes                      b) Alzheimer's                      c) Parkinson's                      d) Cancer
- RNAi is a technique to \_\_\_\_\_ expression of genes.  
a) induce                      b) augment                      c) enhance                      d) inhibit

**II. State whether the following are true or false.**

**(5x1=5 Marks)**

- Leibovitz media for animal cell culture was formulated for use in carbon dioxide free systems.
- Vitrification is a method of slow freezing of cell.
- Inner mass cells within a blastocyst can become any tissue in the body including a placenta.
- Tracy is the first transgenic farm mammal to be created.
- Superovulation is the process of inducing a woman to release more than one egg in a month.

**III. Complete the following**

**(5 x 1 = 5 Marks)**

- Spinner flasks are used in the scale up of \_\_\_\_\_ cultures.
- Trypan blue stains \_\_\_\_\_ cells blue.
- Over-expression of Yamanaka factors can induce \_\_\_\_\_ in adult human somatic cells.
- \_\_\_\_\_ is a process involving injection of a single sperm directly into an egg.
- \_\_\_\_\_ is step in assisted reproductive technology where embryos are placed into the uterus of a female with the intent to establish a pregnancy.

**IV. Answer the following within 50 words**

**(5 x 1 = 5 Marks)**

- Mention any two characteristics of continuous cell line.
- What is trypsinisation?
- State an advantage of using baculovirus vectors for the production of recombinant proteins.
- Define pharming.
- State the objective of oestrous synchronization.

**PART B**

**Answer the following each within 500 words.  
Draw diagrams wherever necessary**

**(5 x 8 = 40 marks)**

21. a) Explain enzymatic disaggregation of tissue isolated for primary culture.  
OR  
(b) Give an account on the commercial scale-up of monolayer cultures.
22. (a) Explain the principle and methodology of cryopreservation.  
OR  
(b) Describe Filter Well Invasion as a method to study invasiveness of tumour cells.
23. (a) Define pluripotency. Write a note of induced pluripotency and its application.  
OR  
(b) Outline the ideal characteristics of scaffold materials used in regenerative medicine.
24. (a) Given an account on the cloning strategy employed to clone Dolly the sheep.  
OR  
(b) Write a note on the application of Knockout Mice in the understanding of diabetes.
25. (a) Explain the steps involved in DNA barcoding of animals.  
OR  
(b) Describe RAPD and RFLP as techniques for livestock improvement.

**PART – C**

**Answer any TWO of the following, each within 1500 words.  
Draw diagrams wherever necessary.**

**(2 x 20 = 40 Marks)**

26. *Contamination of animal cell cultures is the serious problem encountered in animal cell culture laboratories.* – Discuss sources of contamination, methods of detection and prevention of contamination.
27. Explain any two techniques employed to produce transgenic animals. Add a note on the applications of transgenic animals.
28. Discuss the John Moore Case with reference to ethical and legal issues in Animal Biotechnology.
29. Describe in detail *Invitro* Fertilisation and add a note on the challenges encountered with the technique.

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