



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIOTECHNOLOGY

THIRD SEMESTER – NOVEMBER 2015

BT 3822 - ANIMAL BIOTECHNOLOGY

Date : 03/11/2015

Dept. No.

Max. : 100 Marks

Time : 09:00-12:00

PART – A

(20 Marks)

Answer ALL the Questions

I. Choose the correct answer

(5 x 1 = 5)

1. Animal cell culture media with vitamins, minerals, hormones and growth factors is sterilized via
a) Autoclaving b) Filter sterilization c) Tyndallization d) Dry heat sterilization
2. Which among the following is a physiological inducer of differentiation
a) DMSO b) Vitamin A c) Mitomycin C d) Benzodiazapine
3. “X” gene mutants resulted in brain tumors and biopsy showed, uncontrolled proliferation of unipotent neuronal stem cells. What is the role of gene “X”?
a) Dedifferentiation of neurons b) Differentiation of neuronal stem cell
c) Reprogramming neurons d) Transdifferentiation of neurons
4. Which among the following is not used for Transfection?
a) CaCl₂ b) Activated Dendrimers c) Laser light d) Adeno virus
5. Which hormone is used in inducing superovulation
a) GnRH b) FSH c) Hydrocortisone d) Progesterone

II. State whether the following are true or false, if false, give reason

(5 x 1 = 5)

6. Trypsinization is not required to harvest cells grown in suspension cultures.
7. The secondary metabolites synthesized by cell lines are harvested in the log phase.
8. Reprogramming involves an unipotent cell becoming a multipotent stem cell.
9. Female mosquitoes are genetically modified in sterile insect technique, to control the spread of dengue virus.
10. In embryo transfer technology the, recipient is superovulated.

III. Complete the following

(5 x 1 = 5)

11. The markers used in DNA fingerprinting are-----.
12. In ----- technique, the DNA is coated with inert nano particles and is delivered into cells with high velocity.
13. The gene which maintains pluripotency by preventing endoderm differentiation is-----.
14. miRNA having incomplete homology with that of the mRNA onto which it is bound, and this results in-----
15. Stem cell research in ----- have more ethical issues

IV. Answer the following, each within 50 words

(5 x 1 = 5)

16. Name any two cancer cell lines and two non-cancer cell lines
17. List out the assays used for detection of cell apoptosis.
18. Mention the sources of tissue engineering scaffolds.
19. Mention the applications of transgenic pig.
20. What is *in vitro* fertilization?

PART B

Answer the following, each within 500 words.

(5 x 8 = 40 Marks)

Draw diagram wherever necessary

21. (a) Mention the basic components of cell culture media. Discuss the significance of serum in cell culture media and the advantages of serum free media.

OR

- (b) Discuss the various ways to determine the transformation of cell lines.

22. (a) Explain TUNEL assay with illustration

OR

- (b) Describe characterization of cell lines, by spectral karyotyping and fluorescent *in situ* Hybridization.

23. (a) Write a short note on 3D cultures and organ culture.

OR

- (b) Write about stem cell culture at various stages of cleavage.

24. (a) What is pharming? Give the application of pharming and transgenic cattle.

OR

- (b) How an the study of the function of a gene be done, via knock out strategy?

25. (a) What is RNA Interference? Write about its applications in animal research.

OR

- (b) Write about the process of embryo transfer in farm animals, and mention its Advantages.

PART – C

Answer any TWO of the following, each within 1500 words.

(2 x 20 = 40 Marks)

Draw diagrams wherever necessary.

26. Write in detail about Somatic cell nuclear transfer technology used in cloning Dolly. Add a note on the significance of Molly, Polly and Tracy.
27. Elaborate the molecular techniques for screening infectious and genetic disorders in farm animals.
28. Write about stem cell types, and elaborate the molecular basis of inducing pluripotency in somatic cells and their applications.
29. (i) Define cell lines. Mention the types of cell lines.
(ii) Describe the maintenance of cell lines and their uses as model system for cancer research.
