

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIO TECHNOLOGY

THIRD SEMESTER – NOVEMBER 2009

BT 3816 - ANIMAL CELL BIOTECHNOLOGY

Date & Time: 03/11/2009 / 9:00 - 12:00 Dept. No.

Max. : 100 Marks

SECTION A

(20 Marks)

Answer all the questions

I. Choose the best answer

(5X1=5)

1. Which one of the following cells grow well in suspension culture:
 - a) Myoblast
 - b) Epithelial cells
 - c) Fibroblast
 - d) Blood cells
2. Terminally differentiated cells are:
 - a) Unipotent
 - b) Pluripotent
 - c) Totipotent
 - d) Multipotent
3. Characteristics of A grade oocyte are:
 - a) Firm zona, multilayered cumulus and even cytoplasm
 - b) Flexible zona, single layered cumulus and granulated nucleus
 - c) Firm zona, pseudo layered cumulus and even cytoplasm
 - d) Flexible zona, double layered cumulus and granulated cytoplasm
4. Degenerative changes in cells associated with multiplication of viruses is called :
 - a) Hayflick effect
 - b) Crisis effect
 - c) Cytopathic effect
 - d) Cytogenetic effect
5. A fibroblast cell line with 46 chromosomes with a split ratio of 1:5; derived from aborted human fetal lung tissue is:
 - a) MRC-5
 - b) He La
 - c) Jurkat
 - d) Namalwa

II. State whether the following statement is true or False; if false give reasons:

(5X1=5)

6. NIH 3T3 is derived from malignant adenocarcinoma of uterine cervix of Hendrietta.
7. Organotypic and histotypic tissue culture retains vasculature system similar to *in vivo* condition.
8. Vitrification method of freezing employs use of high concentration of cryoprotectants.
9. Most of the mammalian cell products are derived from Chinese Hamster Ovary cell line.
10. Capacitation refers to fertilization.

III. Complete the following:

(5X1=5)

11. _____ is the marker for Neuron.
12. PBMC refers to_____.
13. Clotting factors are _____ and _____.
14. The quality of semen can be assessed based on _____ and _____.
15. ELSI refers to_____.

IV. Answer the following each in not more than 50 words

(5X1=5)

16. Differentiate therapeutic and reproductive cloning.
17. List the cells used for Embryo co-culture.
18. Write about ECM proteins.
19. What are scaffold proteins?
20. Explain any two methods for the detection of transgene.

SECTION B

V. Answer any five questions each in not more than 350 words

(5X8=40)

21. What are the features of a transformed cell?
22. List the applications of cell culture and its limitations.
23. Explain the various methodologies adopted to characterize a cell line and its nomenclature.
24. Write briefly about the media and the types of serum used for cell culture.
25. What are the steps involved in cryopreservation?
26. List the different types of cells, function and its morphology.
27. Give an outline about differentiation and dedifferentiation of stem cells.
28. Write about the propagation of viruses, its classification and CPE.

SECTION C

VI. Answer the following in not more than 1500 words

(2X20=40)

29. a) Elaborate upon the genetic engineering of cells in culture and production of any two therapeutic products from cell lines.

(Or)

- b) Discuss the various methodologies of Assisted Reproductive technology and cloning, transgenic animals and its ethical issues.

30. a) Explain in detail the steps involved in the growth and maintenance of cells *in vitro*. Explain about primary culture, finite and continuous cell lines, phases of growth, passaging and trypsinization.

(Or)

- b) What are animal cell bioreactors? Explain the various types of reactors, its advantages and limitations. List the various therapeutic products harnessed from the reactors.
