

Exam. Code: 0909
Sub. Code: 33370

2124

**B.E. (Biotechnology)
Fifth Semester**

BIO-513: Animal Cell Culture and Biotechnology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 (Section-A) which is compulsory and selecting two questions each from Section B-C.

x-x-x

Section -A

1. Attempt the following:-

- i. What is a primary culture?
- ii. What is HBSS and its importance?
- iii. Which dye/ compound is used in FACS to determine dead cell count?
- iv. What is Trypsin-250 and its source?
- v. What is the function of 'Draught Tube' in an Air-lift bioreactor?
- vi. What is generation period of a cell line?
- vii. Name any two antimycotic antibiotics commonly used in animal cell culture media.
- viii. What are permeable cryoprotectants? Give a suitable example.
- ix. What is oviduct embryo transfer?
- x. What is superovulation?

1 X 10 = 10

Section B

- 2a. What is a primary? Describe important consideration while developing fibroblast cell line from mouse embryos.
- b. What is cold trypsinization and its advantages, if any? Describe this method in brief with schematic diagram(s). 6, 4
- 3a. What is cell cloning? Describe an efficient technique for cell cloning in detail.
- b. What is a flow cytometry? Describe its application(s) in animal cell culture. 5, 5
- 4a. What are animal cell culture scale-up methods? Describe the role of modified roller bottles in scale up of mammalian cell culture.
- b. Describe the terms: Explant culture, feeder layer, histotypic culture and organ culture. 6, 4

Section C

- 5a. What is transfection? Describe the use of non-viral-based vectors in inserting a human clotting factor-IX gene in CHO-host mammalian cells.
- b. What is transgenesis? Describe major considerations and steps involved in development of a transgenic mouse colony. 5, 5
6. Write short notes on **any two** of the following;
i. Cryoprotectants ii. *In vitro* fertilization iii. Transgenic birds
5 X 2 = 10
- 7a. What is embryo-biotechnology and its importance? Describe the methods of embryo transfer in detail.
- b. What are embryonic and adult stem cells? Describe their important properties in brief. 5, 5

x-x-x