

Exam. Code: 0909  
Sub. Code: 6709

1129

**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 which is compulsory and selecting two questions from each Unit.

x-x-x

I. Answer the following:-

- a) Who firstly cultured the human embryonic cells *in vitro*?
- b) What is a cell strain? Give a suitable example?
- c) What are major proteins in serum?
- d) What is karyotyping?
- e) What is Ficoll?
- f) What is arithmetic growth a given cell line?
- g) What is a feeder layer?
- h) What is the composition of sheath fluid used in FACS analysis?
- i) What is isopycnic centrifugation?
- j) What are extracellular matrices? Give suitable examples. (10x1)

**UNIT - I**

- II. a) What is the difference between a primary cell line and an explant cell line? Describe advantages and disadvantages of mammalian cell cultures.
- b) What are major contributions of Ross Harrison, Alexis Carrel, Rous & Jones, and Morgan in animal biotechnology? (5,5)
- III. a) What a minimal growth medium? How animal cell culture media were formulated?
- b) What is a transformed cell line? How they differ from normal cell lines? (5,5)
- IV. a) What are anchorage-dependent cells? Describe the use of micro carriers for scale up of adherent cells.
- b) What is cell cloning? Describe various methods, which may be employed for cloning of transformed animal cells. (5,5)

P.T.O.

**UNIT - II**

- V. a) What is transfection? Describe the method of electroporation in detail including its principle, advantages and disadvantages, if any.
- b) What are antimicrobial agents? How bacterial, fungal and mycoplasma contamination is prevented in animal cell cultures? (6,4)
- VI. Write short notes on any two of the following:-
- a) Binary vector
  - b) Superovulation
  - c) Transgenic birds (5,5)
- VII. a) What is cryopreservation? Describe its principle, considerations and applications in biotechnology.
- b) What are adult stem cells? What are their source(s) and how they are useful in regenerative medicine? (5,5)