

1128
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 Section.

x-x-x

Q 1. Briefly answer the following questions (1*10=10)

- a) HEPES stands for
- b) Two hormones used in animal cell culture
- c) Two features of primary cell culture
- d) Application of feeder layer
- e) Method of stable transfection
- f) Application of stem cells
- g) Diagram of centrifugal elutriation machine
- h) Two Anti-mycoplasma agents
- i) Name two scale up techniques used for suspension culture
- j) Application of HCG in *In-vitro* fertilization

Section-A

- 2. a) How primary cell culture differs from an established cell line? Analyze the merits and demerits of different enzymatic methods of isolating primary cell culture. (7)
- b) Write a detailed note on flow cytometry. (3)
- 3. a) Why cloning of a cell is required? How many different ways cells can be cloned? (5)
- b) How technique of scaling up adherent culture differ from suspension culture? Analyze the merits and demerits of membrane based bioreactors. (5)
- 4. a) Plating density of a culture is dependent upon survival percentage of the culture. Justify. Give detailed account of methods employed for improving survival percentage of a cell culture. (3)
- b) Define serum. By elaborating on disadvantages associated with serum, describe the process of achieving alternate media formulations. (7)

Section-B

5. a) What is DNA transfection? Differentiate between chemical and physical means of DNA transfection. (7)
- b) Give details of different type of storage canisters used in animal cell culture laboratory for cryopreservation. (3)
6. a) Write a detailed note on types of contaminations occurs in animal cell culture. Also give two example each of antibacterial agents used. (5)
- b) What are founder animal? Discuss in detail methodology to produce a transgenic mouse homozygous for a trait. (5)
7. a) Write a short note on embryo transfer technology and the associated advantages. Also provide small description of the IVF procedure employed. (5)
- b) What are the characteristic features of stem cells? Differentiate between adult and embryonic stem cells. (5)