

B. Engg. (Bio-Technology)-5th Semester
 BIO-513: Animal Cell Culture & Biotechnology

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Q. No. 1 which is compulsory and selecting atleast two questions from each Section-A & B.

Q1. Briefly answer the following questions (1*10=10)

- Osmolarity of animal cell culture medium
- Two growth factors used in cell culture
- Two features of finite cell line
- Two tissue specific marker used for cell characterization
- Two characteristic features of embryonic stem cells
- Importance of split ratio
- Two Anti-bacterial agents
- Importance of transient transfection
- Source of carbon in animal cell culture medium
- Name two scale up techniques used for adherent culture

Section-A

- What is secondary cell culture? Write the process of developing cell line from isolated primary culture. (5)
 - Enlist various constituents of a typical cell culture medium. Elaborate on the physiochemical requirements to be considered while formulating animal cell culture medium. (5)
- Why methocel based cell cloning is preferred over agarose procedure. Also explain the method of isolating cloned cells using γ -radiations. (5)
 - Write a detailed note on growth cycle of a culture. Comment on the information that can be drawn by analyzing growth curve of a cell culture. (5)
- Write down the sequence of steps required for characterizing a cell line. Also differentiate between DNA and protein based characterization methods. (5)
 - Why we need to scale up a cell culture? Write down the merits and demerits of roller bottle and air lift fermenter used for scaling up suspension culture. (5)

P.T.O.

(2)

Section-B

5. a) What does DNA transfection means? Differentiate between stable and transient DNA transfection. (7)
- b) Write a note on transgenic animals and their importance. (3)
6. a) Why cells need cryopreservation? Give details of different type of storage canisters used in animal cell culture laboratory for cryopreservation. (5)
- b) Elaborate on detailed methodology to produce a transgenic mouse homozygous for a trait. (5)
7. a) Write a short note on IVF. Who get benefitted with this technique? Give small description of the IVF procedure employed. (5)
- b) What are the characteristic features of embryonic stem cells? Among adult and embryonic stem cells, which are more promising and why? (5)