**Exam. Code: 0909**
**Sub. Code: 33370**

**2125**
**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.No.1** Write Short notes on the following;

**a)** Differentiate among infection, transformation and transfection.
**b)** What do you mean by subculture, when do you perform subculture of animal cells?
**c)** Write a note on cell differentiation and proliferation.
**d)** What is a founder animal how would you find it?
**e)** What is mycoplasma contamination, how is it detected?
**f)** Write a line about the function of Trypsin and EDTA during cell digestion.
**g)** What is the significance of addition of phenol red in a culture medium?
**h)** What is pluripotency, which cell types show pluripotency character.
**i)** What are feeder layer culture, what is their importance?
**j)** What is a bioreactor, why are these used in animal cell culture? **(1x10=10)**

## Section-A

**Q.No.2 a)** Write briefly about different cell adhesion molecules important to adherent cells in culture.
**b)** What is Serum and why do you add it in the media. Also discuss how does the pH is regulated during growth of the animals cells in culture. **(5+5)**

**Q.No.3a)** What is a primary cell culture, discuss how can these be isolated and established.
**b)** What is the Principle of Flow cytometer, why is it used in animal cell culture. **(7+3)**

**Q.No. 4** Write notes on **any two** of the following;
**a)** Importance of cell characterization with any two methods to support your answer.
**b)** Scale up using Continuous flow culture and multisurface culture
**c)** Different types of medias and their advantages and disadvantages **(5+5)**

## Section-B

**Q.No.5a)** How is transient transfection different from stable transfection, discuss by giving details of one method each from chemical based and physical based transfections.
**b)** What are different types of contaminants those affect growth of animal cell in culture, how are these detected. **(5+5)**

**Q.No.6a)** Discuss any two methods for development of transgenic animals.
**b)** Discuss in detail *in vitro* fertilization and embryo transfer methods. **(3+7)**

**Q.No.7a)** What are stem cells, differentiate between embryonic and adult stem cells. Also add a note on induced pluripotent stem cells.
**b)** Why do we cryopreserve the animal cells, adding a note on different cryopreservants, discuss what is their importance. **(6+4)**

*x-x-x*