Roll No. | | | | | | | | | | | | Total No. of Pages : 01

Total No. of Questions : 08

M.Tech.(Bio Tech.) (Sem.–2)

STEM CELL TECHNOLOGY

Subject Code : MTBT-110

M.Code : 23010

Time : 3 Hrs. Max. Marks : 100

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**

1. a) Explain the different properties which are found in stem cells. Describe the different types of stem cell based upon their "Potency".
   b) What is the stem cell niche in small intestine microenvironment?
2. a) Explain how would you show that embryonic stem cells are TRULY PLURIPOTENT?
   b) What are the different social and ethical issues pertaining to stem cell research
3. Describe the different properties associated with the embryonic stem cells (ESC) and what are the different types of makers that are expressed in Mouse ESC and Human ESC.
4. a) What are Mesenchymal stem cells. Explain its appealing characteristic properties and the process of isolation of these cells.
   b) Explain how stem cells can play an important role for the treatment of diabetes.
5. a) What are the different markers that are found to be expressed in small intestine and colon stem cells?
   b) How can you use FACS for the separation of stem cell? Briefly elaborate with an experimental setup.
6. a) Describe the immuno-phenotypic characteristics of human and mouse long-term repopulating hematopoietic stem cells (LT-HSC).
   b) Explain the biomedical application of stem cells in skin diseases.
7. Write notes on the following :
   a) Epigenesis in pluripotent stem cells
   b) Stem cell Plasticity
8. Explain in detail the process by which Leukemia inhibitory factor (LIF) are involved in keeping the embryonic stem cells in undifferentiated state.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.