

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER- VI(NEW) – EXAMINATION – SUMMER 2019

Subject Code: 2160309

Date: 21/05/2019

Subject Name: Introduction to Tissue Engineering

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

- Q.1**
- (a) Enlist materials used in tissue engineering with their application. **03**
  - (b) What is cell polarity explain in detail. **04**
  - (c) Artificial skin may or may not contain living cells. What are the advantages and disadvantages of having cells in the artificial skin? Are keratinocytes immunogenic? Why? If you are going to make artificial skin with cells, where are you going to get the cells? **07**
- Q.2**
- (a) Explain Rheological Properties of Biological Fluids and Gels. **03**
  - (b) Write a note on Bone marrow transplantation. **04**
  - (c) Explain Phases of cell division and physical transformations in eukaryotic cells **07**
- OR**
- (c) What are the different Characteristics of stem cells, explain pattern for differentiation of unipotent stem cells. **07**
- Q.3**
- (a) Write aspects of Tissue engineering approaches to nerve regeneration. **03**
  - (b) Explain Mechanical Behavior of Blood Cells. **04**
  - (c) What are the different Characteristics of stem cells, explain pattern for differentiation of unipotent stem cells. **07**
- OR**
- Q.3**
- (a) Explain following term chemo-taxis. **03**
  - (b) Explain cell aggregation. **04**
  - (c) Explain pattern of stem cell differentiation during hematopoiesis. **07**
- Q.4**
- (a) What is organ transplantation? **03**
  - (b) Explain Mechanical Behavior of Blood Cells. **04**
  - (c) Is soft tissue elastic or viscoelastic? Is the stress-strain relationship linear or nonlinear for soft tissues? What is quasi-linear viscoelasticity? **07**
- OR**
- Q.4**
- (a) Explain cell sorting methods. **03**
  - (b) Write a note on cell migration. **04**
  - (c) What is cell adhesion? Explain different experimental Methods for Measuring Cell Adhesion. **07**
- Q.5**
- (a) What are different aspects of neural tissue engineering? **03**
  - (b) What are different aspects of cardiac tissue engineering? **04**
  - (c) Write a note on Tissue-Engineered Skin. **07**
- OR**
- Q.5**
- (a) Explain Future Applications of Controlled Delivery in Tissue Engineering. **03**
  - (b) Write a note on scaffold design. **04**
  - (c) Write a note on Tissue-Engineered Cartilage. **07**

\*\*\*\*\*