

**PARUL UNIVERSITY**  
**FACULTY OF ENGINEERING & TECHNOLOGY**  
**B.Tech. Summer 2018 - 19 Examination**

**Semester: 8****Subject Code: 03111480****Subject Name: Tissue Engineering****Date: 01/05/2019****Time: 10:30am To 01:00pm****Total Marks: 60****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

**Q.1 Objective Type Questions - ( Fill in the blanks, one word answer, MCQ-not more than Five in case of MCQ) (All are compulsory) (Each of one mark) (15)**

1. Cell signaling compounds cytokines are group of:
  - a. Carbohydrates
  - b. Proteins & peptides
  - c. Lipids and fats
  - d. Hormones & steroids
2. The formation of blood vessel from the pre-existing blood vessel is known as
  - a. angiogenesis
  - b. vascularization
  - c. osteogenesis
  - d. phagocytosis
3. Cell sorting technique sometimes rely on cell characteristics like size. Which of the following technique(s) follow this rule?
  - a. centrifugation
  - b. immunization
  - c. filtration
  - d. both a and c
  - e. both a and b
4. Which of the following is not a tool for tissue engineering?
  - a. Proteins
  - b. Scaffold
  - c. Cell signalling
  - d. Cells
5. Visceral tissue engineering is related to which of the following?
  - a. Lymphatic system
  - b. Nervous system
  - c. Internal organs
  - d. Integumentary organ
6. Transplantation of liver from Pig to human is called \_\_\_\_\_ transplantation
7. \_\_\_\_\_ is the mitosis phase in cell cycle.
8. The protein that binds to cyclin and cdk blocking entry into S phase is \_\_\_\_\_
9. What is the function of hemidesmosomes?
10. The signals which affect cells of the same cell type as the emitting cell are \_\_\_\_\_
11. cAMP and cGMP functions as \_\_\_\_\_ in cell signaling
12. In cartilage tissue engineering \_\_\_\_\_ cells are used.
13. One of the most commonly used biomaterial for cardiovascular tissue engineering is \_\_\_\_\_
14. Which cells are used for Tissue Engineered Heart Valves?
15. What are cadherins?

**Q.2 Answer the following questions. (Attempt any three)****(15)**

- A) What are scaffolds? Describe the methods which are used for the synthesis of scaffolds.
- B) Describe the advantages and disadvantages of using embryonic stem cells in tissue engineering
- C) Write a short note on "Engineering tissues for bones and cartilages".
- D) Explain different steps of cell migration.

**Q.3** A) Explain the different methods of cell-to-cell communication. (07)

B) Discuss the recent developments in the use of tissue engineering in therapeutics. (08)

**OR**

B) Give a brief overview of cellular adhesion and receptor-ligand binding (08)

**Q.4** A) Discuss about different cell junctions. (07)

**OR**

A) In an accident, Patient X suffered a full thickness wound in an area of about 5cm X 7cm to the skin of their forearm. Describe an experimental strategy by which he/she can be treated. (07)

B) Many people believe that tissue engineering may someday offer an alternative for patients who now can only be treated by whole-organ transplantation. List three other possible uses for tissue Engineering and provide an example of each. (08)