

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS-2022

B.Tech-IV Semester (BT)

COURSE CODE (CREDITS): 14B1WBT739 (3)

MAX. MARKS: 25

COURSE NAME: Stem Cells and Regenerative Medicines

COURSE INSTRUCTORS: Dr. Udayabanu, M.

MAX. TIME: 1 Hour and 30 Minutes

---

*Note: All questions are compulsory. Marks are indicated against each question in square brackets.*

---

Q1. Muscle Derived stem cells in regenerative Medicine

(CO3,4)

- a) How would you isolate MDSCs from a skeletal muscle biopsy? [3 Marks]
- b) After skeletal muscle injury, there is a well-defined process of healing, which includes an interdependent cascade of events that involves MDSCs. Explain. [2 Marks]

Q2. Impairment in the functioning of Pancreatic islets of langerhans is associate with diabetes mellitus. Analyze the following conditions and interpret the outcome. (CO3,4)

- a) When Somatostatin level is upregulated, what type of effect would it have on insulin and glucagon? [3 Marks]
- b) Pancreatic alpha cells secrete which hormone and what is its function? [2 Marks]

Q3. Scaffolds are materials that have been engineered to contribute to the formation of new functional tissues for medical purposes. (CO5)

- a) Can hydrogels be used as a scaffold material? If so what would be the advantages or disadvantages of hydrogels. [3 Marks]
- b) What is a Bioglass? Write the composition 45S5 Bioglass and its importance in tissue regeneration/engineering. [3 Marks]
- c) Fabricate a polymeric scaffold using particle leaching technique and state its advantages and disadvantages. [3 Marks]

Q4. Erythropoiesis and thrombopoiesis require same or different growth factor. Discuss. [3 Marks] (CO2,3)

Q5. State the different stages involved in the adult neurogenesis in subventricular zone of the lateral ventricle. [3 Marks] (CO2,3)