



M.Sc. II Semester Degree Examination, Sept./Oct. - 2024

BIOTECHNOLOGY

Stem Cell Technology and Regenerative Medicine

(NEP)

Time : 3 Hours

Maximum Marks : 70

Note : (i) Answer **any five** of the following questions with Question **No.1 (Q1)**

Compulsory. Each question carries **equal** marks.

(ii) Draw neat diagrams wherever necessary.

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| 1. | (a) | Explain how stem cells are special than other cells. | 4 |
| | (b) | Explain about Cardiac stem cells and their application in medicine. | 10 |
| 2. | (a) | Explain paracrine signaling in stem cells. | 4 |
| | (b) | Discuss on types of junctional complexes involved in stem cell communication. | 10 |
| 3. | (a) | Explain in detail about types of Hematopoietic growth factors and their role in regulation. | 7 |
| | (b) | Describe in detail about causes, clinical features and manifestation for sickle cell anemia. | 7 |
| 4. | (a) | Briefly explain encapsulation technology. | 7 |
| | (b) | Discuss in brief about stem cell-based repair therapies. | 7 |
| 5. | (a) | Discuss about current ethical guidelines for stem cell research in INDIA. | 7 |
| | (b) | Explain the current regulation of human embryonic stem cell research. | 7 |
| 6. | (a) | Discuss in detail about red blood cells and white blood cells associated disorders. | 7 |
| | (b) | Discuss in detail about key components and characteristics of the stem cell niche. | 7 |
| 7. | (a) | Distinguish between bone marrow transplantation and stem cell transplantation. | 7 |
| | (b) | Express your views on predictable future of advanced stem cell research in India. | 7 |
| 8. | (a) | IPR with reference to stem cell | 5 |
| | (b) | Genetically engineered stem cells | 5 |
| | (c) | Stem cell bank | 4 |

