

**MASTER OF SCIENCE (MEDICAL BIOTECHNOLOGY) (CBCS-2018 COURSE)**  
**M.Sc. (Medical Biotechnology) Sem-III : WINTER :- 2021**  
**SUBJECT: ANIMAL TISSUE CULTURE & STEM CELL BIOLOGY**

Day : Tuesday  
Date 25-01-2022

W-20234-2021

Time : 10:00 AM-01:00 PM  
Max. Marks: 60

**N.B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** Marks.
- 3) Both the sections should be written in **SAME** Answer Book.

**SECTION-I**

- Q.1** Answer **ANY FIVE** of the following in brief. **(10)**
- a) What are anchorage dependent cells? Give one example.
  - b) What is explant cultures system?
  - c) State important features of inverted microscope.
  - d) What are isoenzymes? State their use in ATC.
  - e) Name any two tissue culture growth media and state their use.
  - f) Which cell lines have a limited life span? Why?
- Q.2** Attempt **ANY TWO** of the following. **(10)**
- a) Why it is important to include buffer in tissue culture medium? Explain the bicarbonate buffering system.
  - b) Compare the growth characteristics of normal diploid cell line with continuous cell line.
  - c) Describe the principle and applications of MTT assay.
- Q.3** Write short notes on **ANY TWO** of the following. **(10)**
- a) Viable counting
  - b) Bio-stat
  - c) Micro-carriers

**SECTION-II**

- Q.4** Answer **ANY FIVE** of the following in brief. **(10)**
- a) What is feeder layer? State its use.
  - b) Give any two limitations of cell culture system.
  - c) What is the location of embryonic stem cells in blastula? State their differentiation potential.
  - d) State any two advantages of three dimensional cell culture.
  - e) What are the sources of adult stem cells?
  - f) State the use of FACS in ATC.
- Q.5** Attempt **ANY TWO** of the following. **(10)**
- a) What are stem cells? Describe their types and properties.
  - b) How ATC can be used for replacing damaged tissues or organs?
  - c) Explain the substrate used for growing bio-constructs. What basic properties it should possess?
- Q.6** Write short notes on **ANY TWO** of the following. **(10)**
- a) Islet cell transplantation
  - b) Bio-printing of organs and tissues
  - c) Therapeutic use of stem cells