**ST JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU -27**

Registration Number:

Date & session: 09-12-2022; 9:00-11:30 am

**M.Sc. BIOTECHNOLOGY – III SEMESTER**

**SEMESTER EXAMINATION: OCTOBER 2022**

**(Examination conducted in December 2022)**

**BT9422: Plant, Animal and Environmental Biotechnology**

**Time: 2.5 Hours Max Marks: 70**

**This paper contains *ONE* printed page and *THREE* parts**

1. **Answer any *TEN* questions: 2m x 10 = 20 marks**
2. What are bioactive compounds? Give examples.
3. Give the role of any two transcription factors in plant stress tolerance.
4. What are gene banks?
5. What is food security?
6. Define Primary cell culture.
7. Which are the two commonly used cryoprotectants in a freezing medium?
8. What is xenotransplantation?
9. Why is lentivirus a good vector?
10. Name two sources to harvest biofuels. State any two reasons why biofuels are important.
11. Briefly explain the anaerobic mode of wastewater treatment using a flowchart.
12. Describe the process of composting.
13. Name any two potential biomaterials that can be used in solar cell production.

**B. Answer any *FIVE* questions: 6m x 5 = 30 marks**

1. What is marker assisted selection? What are its advantages and disadvantages?
2. Write a note on DNA barcoding and its importance.
3. What are the steps involved in hybridoma technology for production of monoclonal antibodies?
4. Briefly describe scaffold based 3D cell culture.
5. Skin 3D constructs are an alternative to animal testing. Justify
6. Why is bioremediation important? Explain the types using examples. How is it different from biodegradation?
7. Write a brief note of various wastewater treatment methods.

**C. Answer any *TWO* questions: 10m x 2 = 20 marks**

1. Explain the mechanism of any two plant transformation techniques.
2. Explain the strategies used for disaggregation of cells to initiate primary culture *in vitro*.
3. Explain the following, with diagrams where necessary:
   * 1. Any five methods for solid waste management (5 marks)
     2. Compare the aerobic suspended process and the aerobic attached process (5 marks).