**ST JOSEPH’S UNIVERSITY, BENGALURU -27**

Registration Number:

Date & session:

**M.Sc. (ENVIRONMENTAL SCIENCE AND SUSTAINABILITY) – 2nd SEMESTER**

**SEMESTER EXAMINATION: APRIL 2024**

**(Examination conducted in May / June 2024)**

**ES 8222 – ENVIRONMENTAL MICROBIOLOGY AND ENVIRONMENTAL BIOTECHNOLOGY**

 **(For current batch students only)**

**Time: 2 Hours Max Marks: 50**

1. **This paper contains ONE printed pages and THREE parts**
2. **Draw diagrams wherever necessary**

**PART – A**

**Answer any FIVE of the following: 5q X 2m = 10m**

1. State the techniques employed to study the bacterial cell wall composition.
2. Write any four environmental applications of nanoparticles.
3. Outline the benefits of e-DNA.
4. What is bio-stimulation?
5. List the advantages of GMOs.
6. What is the function of cry gene?
7. Mention the composition of Syngas and Biogas.

**PART – B**

**Answer any FOUR of the following 4q X 5m = 20m**

1. Explain the serial dilution technique for microbial culture.
2. Write short notes on advantages of anaerobic process in waste water treatment
3. How are biosafety levels determined?
4. Classify the carbohydrates with an example for each category.
5. What are biomaterials? Classify with their applications.
6. Biofuels as substitutes for conventional fuels - Debate.

**PART – C**

**Answer ALL the questions 2q X 10m = 20m**

1. a. Explain the process of biochemical conversion of organic waste to bioethanol.

**OR**

b. Discuss the bioremediation techniques involved in treatment of oil spills.

1. a. Discuss the process of recombinant DNA technology.

**OR**

b. Summarize the factors that impact microbial growth.