

No. of Printed Pages : 1

Sl. No.

**21BTH3E1CL**



**M.Sc. III Semester Degree Examination, April/May - 2023**

**BIOTECHNOLOGY**

**Biofuels and Bioenergy**

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 about various types of biofuels and their applications.                        | 7  |
|    | (b) | Brief about various biofuel feedstocks and their properties.                           | 7  |
| 2. |     | Explain in detail on production and applications of Biobutanol.                        | 14 |
| 3. |     | Explain the production of biodiesel by using micro-organisms and algae.                | 14 |
| 4. | (a) | What are biogas and biomethane ?   | 5  |
|    | (b) | What are the differences between biomethane and green gas ?                            | 5  |
|    | (c) | Discuss Bioethanol as replacement for petrol.  | 4  |
| 5. |     | Discuss in detail about life cycle assessment of various biofuels.                     | 14 |
| 6. | (a) | Explain about the properties of Bioethanol and Biobutanol.                             | 7  |
|    | (b) | Brief on technology applications for Bioethanol.                                       | 7  |
| 7. |     | Explain in detail about production of biogas, and write about its economic importance. | 14 |
| 8. | (a) | Do biofuels affect the production of food ? Discuss.                                   | 7  |
|    | (b) | Discuss about current and future perspectives on lipid-based biofuels.                 | 7  |

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