



## M.Sc. III Semester Degree Examination, April/May - 2024

### BIOTECHNOLOGY

#### Biofuels and Bioenergy

#### (NEP)

Time : 3 Hours

Maximum Marks : 70

**Note :** Answer **any five** of the following questions with Question No.1 (Q1) **compulsory**, each question carries **equal** marks.

1. Give a detailed account on types of biofuels and their production. 14
2. Write short notes on the following :
  - (a) Bio-butanol Production 5
  - (b) Spark ignition engines 5
  - (c) Starch to ethanol process 4
3. Write short notes on the following :
  - (a) Feed stock production 5
  - (b) Biodiesel production by microorganisms 5
  - (c) Emissions of lipid biofuels 4
4. Discuss in detail on life cycle assessment of various biofuels. 14
5.
  - (a) Explain in detail about biomass as a source of biofuel production. 7
  - (b) Discuss economic impact of biofuels over fossil fuels. 7
6. Give a note on the following :
  - (a) Purification of Biogas 5
  - (b) Applications of Biomethane 5
  - (c) Microbial fuel cell 4
7. Write a detailed note on Bio-methane production. 14
8. Different processes involved in bioethanol production. 14

