

CBCS SCHEME

21BT754



Seventh Semester B.E./B.Tech. Degree Examination, June/July 2025 Biofuels and Bioenergy

Time: 3 hrs.

Max. Marks: 100

Note : Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Describe biofuels and bioenergy systems with an example. (10 Marks)
b. Write detailed note on characteristics and classification of biofuel and bioenergy resources. (10 Marks)

OR

- 2 a. Explain biomass production with a neat sketch. (10 Marks)
b. Give a detailed note on types of biomass derived fuels and energy. (10 Marks)

Module-2

- 3 a. Enumerate various steps involved in biogas production from organic matters. (10 Marks)
b. Write a note on fermentation technology. Explain with an example. (10 Marks)

OR

- 4 a. Discuss about effects of different factors on pyrolysis and gasification. (10 Marks)
b. Enumerate the mechanism involved in the thermochemical and biochemical conversion of biomass to fuels. (10 Marks)

Module-3

- 5 a. Discuss about biomass contribution to circular economy. (10 Marks)
b. How the bio – diesel is produced? Explain. (10 Marks)

OR

- 6 a. What are the various biomass topologies? Explain any four. (10 Marks)
b. How the bio – gas is produced from organic waste and water? Explain. (10 Marks)

Module-4

- 7 a. Enumerate the steps involved in bio – ethanol production. (10 Marks)
b. Describe types and properties of biomass. (10 Marks)

OR

- 8 a. Explain about chemical engineering tools for analysis and design of energy processes. (10 Marks)
b. Write a note on gasification and pyrolysis plants. (10 Marks)

Module-5

- 9 a. Describe the following biomasses : (10 Marks)
i) Syngas ii) Charcol and iii) Biochar.
b. Explain about hydrothermal processes with suitable example. (10 Marks)

OR

- 10 a. Write a short note on following terms : i) Steam explosion ii) Polluting and iii) Chipping. (10 Marks)
b. Give a detailed note on Algal biofuels and transesterification. (10 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.