MODEL QUESTION PAPER

Eighth Semester B.Tech. Degree Examination, May 2017
(2013 Scheme)
13.804.2: BIO-FUEL TECHNOLOGY AND ENGINEERING - ELECTIVE III (B)

Time: 3 Hours Max. Marks: 100

Part A

(Answer **all** questions. **Each** carries **2** marks)

1) What are the main types of biomass resources?

2) Can you process oils and fats for liquid fuels?

3) Briefly discuss the pyrolysis process.

4) What are the benefits and drawbacks of biogas technology?

5) Explain sludge treatment.

6) Give a short note on biodiesel technology.

7) Mention the significance of photosynthetic bacteria in energy production.

8) Comment on characterization of bioconversion substrates and products.

9) Draw a neat diagram of a fluidized bed gasifier.

10) What are the types of biological fuel cells?

Part B

(Answer **any** 1 question from each module)

Module I

11 a) Write short notes on briquetting of loose biomass. **(10 marks)**

b) Explain thermo-chemical gasification principle and the effect of various parameters on gasification. **(10 marks)**

OR

12 a) Explain aerobic and anaerobic pathways of coal degradation? **(12 marks)**

b) Write about desulfurization of coal **(8 marks)**

Module II

13 a) With a neat diagram explain the high rate digesters for industrial waste water treatment. **(10 marks)**

b) What are the operating parameters for biogas production along with their effects on biogas generation**?** **(10 marks)**

OR

14 a) Explain the esterification of oil to biodiesel. **(10 marks)**

b) Describe the production of bioethanol. **(10 marks)**

Module III

15 a) What are the applications of Biological fuel cells? Explain the construction and operation of a biofuel cell. **(15 marks)**

b) Explain the hydrogen production by bacteria. **(5 marks)**

OR

16) Write short notes on:

(i) Microbial recovery of petroleum by a biopolymer **(10 marks)**

(ii) Biophotolysis of water **(10 marks)**

Module IV

17) a**)** Elaborate on combustion of woody biomass. Give the energy balance calculations involved. **(13 marks)**

b) Differentiate between Fluidized bed and fixed bed gasifiers. **(7 marks)**

OR

18 a) Write short notes on combustion of rice husk and the associated energy balance calculations in a combustion system? **(10 marks)**

b) Elaborate on the use of bagasse on cogeneration. **(10 marks)**