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B.E. / B.Tech. (Full Time) DEGREE Arrear EXAMINATIONS, NOV / DEC 2012

AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH

EIGHTH SEMESTER

AI 9030 – BIO-ENERGY RESOURCE TECHNOLOGY

(REGULATIONS 2008)

Time : 3 hrs

Max Marks : 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

- 1) List any 5 types of biogas plants recognised by MNES.
- 2) Explain Baeyer-Villiger oxidation reaction.
- 3) List out 3 bio-gas appliances with their desirable characteristics.
- 4) Compare Natural gas and Bio-gas.
- 5) Write a note on BOD.
- 6) Define the theoretical retention time for a bio-reactor.
- 7) What are the side effects of using antibiotics?
- 8) Differentiate pyrolysis and gasification.
- 9) Compare some important properties of Jatropha-oil and diesel.
- 10) What are the measures of stove performance?

Part – B (5 x 16 = 80 Marks)

- 11) Describe with a neat sketch the primary and secondary treatments of a waste water treatment plant. (16)
 - 12) a) i) Explain the Krebs's cycle in detail. (8)
ii) Explain energy coupling in ion transport with examples. (8)
- (or)
- b) i) Compare and explain with flow charts the present and future digester and gas upgrading process flow. (8)
 - ii) Where does bio-gas come from? Explain the process of controlled and uncontrolled anaerobic digestion. (8)

13) a) Explain the various types of biomass in detail. (16)

(or)

b) Explain the various steps involved in biogas production and the factors affecting the same.
Also discuss the factors affecting the operation of biogas production. (16)

14) a) Describe the principles of thermo chemical conversion and compare the properties of thermo chemical conversion variants. (16)

(or)

b) i) What are the different industrial applications of enzymes? Also explain the synthesis of methanol. (8)

ii) What is fermentation? Explain the various processes of bio-ethanol production. (8)

15) a) What is deforestation? Discuss in detail the causes and effects of the same. (16)

(or)

b) Describe in detail the stepwise process of making briquettes. (16)