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B.E. / B.Tech. (Full Time) DEGREE ARREAR EXAMINATIONS, APRIL / MAY 2011

AGRICULTURAL AND IRRIGATION ENGINEERING BRANCH

FOURTH SEMESTER – (REGULATIONS 2004)

AI 283 – BIO-ENERGY RESOURCE TECHNOLOGY

Time: 3 hrs Max Marks: 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1) What is biodegradation? Give examples.
2) List any 5 types of biogas plants recognised by MNES.
3) List the subunits of pyruvate dehydrogenase.
4) What is GLOBALGAP?
5) Define the theoretical retention time for a bioreactor.
6) Write the flow chart for production of bio ethanol from wood or straw.
7) Write a note on synthetic gas.
8) How are carbohydrates classified?
9) Differentiate pyrolysis and gasification.
10) What are the various renewable energy sources?

Part – B (5 x 16 = 80 Marks)

11) i) How will you test the anaerobic respiration in yeast? (6)

ii) Explain with a neat sketch, the bioreactor used for solid state fermentation. (10)

12) a) i) Explain the Kreb's cycle in detail. (8)

ii) Explain energy coupling in ion transport with examples. (8)

(or)

b) What are the various bioreactors used in industry? Explain the salient features of any 3 of them with neat diagrams. (16)

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) i) Discuss in detail the production of bio ethanol from corn by wet and dry milling process. (10)

ii) What are the different industrial applications of enzymes? (6)

(or)

b) Explain the genomics of alternative fuels in conversion of biomass to cellulosic ethanol. (16)

15) a) i) List out the advantages and disadvantages of various energy types. (8)

ii) Discuss on bio diesel road map. (8)

(or)

b) What is simplified stove theory? Describe the challenges and solutions to maximise combustion efficiency. (16)