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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)

B.Tech IV Year I Semester Regular Examinations November/December-2022

**SOLID WASTE & BY-PRODUCT UTILIZATION**

(Agricultural Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

**UNIT-I**

- 1 a Explain briefly about Solid waste management. L2 6M  
b Discuss about advantages and disadvantages of composting. L6 6M

OR

- 2 List out the types of biogas plants and explain about Janatha biogas plant with neat sketch. L1 12 M

**UNIT-II**

- 3 a Write about bio fuels and their raw materials. L1 6M  
b Distinguish incineration and pyrolysis. L4 6M

OR

- 4 Explain about biomass conversion technologies. L1 12 M

**UNIT-III**

- 5 a Draw a flow chart for energy conservation routes and products from bio mass. L2 4M  
b Explain updraft Gasifier with neat sketch. L1 8M

OR

- 6 Explain in detail about fluidised bed Gasifier with neat sketch and what are the advantages of fluidised bed Gasifier? L1 12M

**UNIT-IV**

- 7 a The following data are given for a family biogas digester suitable for the output of five cows; the retention time is 30 days, temperature 32°C, dry matter consumed per day= 2 kg, biogas yield is 0.24 m<sup>3</sup>/kg. The efficiency of burner is 70%, methane proportion is 0.6 heat of combustion of methane =30 MJ/m<sup>3</sup>. Calculate:  
i) the volume of biogas digester  
ii) The power availability from the digester L3 6M  
b Discuss advantages and disadvantages of floating drum type biogas plant. L6 6M

OR

- 8 a Write about site selection for biogas plant construction. L1 8M  
b Explain about materials used for biogas production. L1 4M

**UNIT-V**

- 9 a Explain screw type briquetting machine with neat diagram L1 8M  
b Discuss about factors effecting of briquetting process. L6 4M

OR

- 10 a Explain bio diesel production from Jatropha seed using flow diagram L2 6M  
b Explain about different types of shredding machines are used in briquetting process. L1 6M

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