

Subject : Waste to Energy

Course : II M.TechI Semester

Question Bank – Unit - I

1. Explain classification of waste – in detail
2. Discuss Agro based waste briefly
3. Discuss Forest residue briefly
4. Explain the importance of Industrial waste utilization with neat sketches
5. What is MSW ? Explain different types of MSW
6. Write short notes on conversion devices wrt waste management
7. (a) Define incinerator?
(b) Explain the following incinerators briefly
 - (i) Moving Grate (ii) Fixed Grate (iii) Rotary Kiln
8. Explain the following gasifiers with neat sketches
 - (i) Updraft (ii) Down draft gasifier
9. List out advantages of gasification over incineration
10. Explain various types of digestors for waste management briefly

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Question Bank – Unit - II

1. Explain the process of pyrolysis – in detail
2. What are the various types of pyrolysis? Comparison between methods
3. Discuss Slow and Fast Pyrolysis methods
4. Write short notes on charcoal
5. Explain the following types of charcoal production processes
 - (i) Earth kiln
 - (ii) Brick kiln
 - (iii) Metal kiln
6. List out applications of Charcoal in various domains
7. (a) Define pyrolytic oil?
(b) Explain the manufacturing process of pyrolytic oils briefly
8. Discuss various applications and yields of pyrolytic oils – in detail
9. (a) Define Syngas ? how syngas is produced.
(b) Mention primary applications of Syngas in various engineering fields
10. Write short notes on
 - (i) Charcoal
 - (ii) Pyrolytic oils
 - (iii) Pyrolytic gases

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Question Bank – Unit - III

1. Define gasifier. Classify various types of gasifiers.
2. Explain the design, construction and operation of Downdraft gasifier.
3. Explain the design, construction and operation of updraft gasifier.
4. Explain the design, construction and operation of fluidized bed gasifier.
5. Explain Gasifier burner arrangement for thermal heating in detail.
6. Draw Gasifier engine arrangement for production of Electric power and explain the methodology.
7. Discuss the following
 - (i) Equilibrium (ii) Kinetic considerations of gasifier in detail
8. Write short notes on
 - (i) Downdraft (ii) Updraft gasifiers
9. Write short notes on
 - (i) Fluidized bed (ii) Downdraft gasifier
10. How gasifier output is utilized in Electrical Power Plants - Justify

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Question Bank – Unit – IV

1. Write Short notes on Biomass stoves
2. Explain Design, Construction and Operation of Fixed bed combustor
3. Explain Design, Construction and Operation of Inclined Grate Combustor
4. Explain Design, Construction and Operation of Fluidized bed Combustor
5. Briefly discuss various types of Combustors
6. Explain the operation of Fixed bed combustor with neat sketches
7. Explain the operation of Inclined Grate Combustors
8. Explain the operation of Fluidized bed combustor with neat sketches.
9. What is meant by exotic design of Biomass Stove? Explain in detail
10. Compare the following combustors wrt operational and constructional features.
 - (i) Fixed bed
 - (ii) Inclined Grate
 - (iii) Fluidized bed

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Question Bank – Unit – V

1. Explain Design, Constructional features of Biogas Plant Technology
2. What is meant by Biomass resources? Classify based on their application.
3. Discuss Biomass conversion processes
4. Write short notes on
 - (i) Thermo Chemical Conversion
 - (ii) Direct combustion of Biomass
5. (a) Classify Biogas plants
 - (b) List out applications of biogas plants
6. Explain the following in detail
 - (i) Biomass gasification
 - (ii) Pyrolysis & Liquefaction
7. Explain Alcohol production from Biomass
8. Write short notes on
 - (i) Urban Waste to Energy Conversion
 - (ii) Biomass Energy Programme
9. Explain the following in detail wrt biomass plants
 - (i) Bio-Chemical Conversion
 - (ii) Anaerobic digestion
10. Explain Bio-diesel production in detail