Course Code: 20EE0227 **R20**

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR (AUTONOMOUS)
Siddharth Nagar, Narayanavanam Road – 517583

QUESTION BANK (DESCRIPTIVE)

Subject with Code: GENERATION OF ENERGY FROM WASTE (20EE0227) **Course & Branch**: Open Elective

Year & Sem: III-B.Tech & I-Sem **Regulation: R20**

UNIT –I

Introduction to Energy from waste

1	a) What are the different kinds of waste? b) Explain different types of waste in details.	[L3][CO1] [L3][CO1]	**[4M]** **[8M]**
2	a) What is Agro based waste? b) Discuss the Agro based waste briefly.	[L3][CO1] [L3][CO1]	**[2M]** **[10M]**
3	a) What is Forest residue? b) What are the Sources and Types of Solid Wastes?	[L1][CO1] [L3][CO1]	**[2M]** **[10M]**
4	What is Industrial Waste? What are the effects of industrial waste? What are the management of industrial waste?	[L2][CO1]	**[12M]**
5	What is MSW? Explain solid waste management.	[L3][CO1]	**[12M]**
6	Write short notes on conversion devices with respect to waste management	[L1][CO1]	**[12M]**
7	(a)Define incinerator?	[L1][CO1]	**[03M]**
	(b) Explain the following incinerators briefly (i) Moving Grate (ii) Fluidized bed (iii) Rotary Kiln	[L2][CO1]	**[09M]**
8	Explain the following gasifies with neat sketches (i) Updraft (ii) Down draft gasifier	[L3][CO1]	**[12M]**
9	What are the advantages and disadvantages of gasification? What are the advantages and disadvantages of incineration?	[L1][CO1]	**[12M]**
10	Explain biogas digestor for waste management briefly	[L2][CO1]	**[12M]**

UNIT-II
Bio-mass Pyrolysis

1	What are the different types of pyrolysis process? Compare the different types of pyrolysis process.	[L3][CO2]	**[12M]**
2	Write the various process of pyrolysis – briefly.	[L2][CO2]	**[12M]**
3	What are the different types of pyrolyzers?	[L1][CO2]	**[12M]**

4	Write down the short notes on charcoal.	[L3][CO3]	**[12M]**
5	Explain the following types of charcoal production processes (i) Earth kiln (ii) Brick kiln (iii) Steel kiln	[L2][CO3]	**[12M]**
6	List out applications of Charcoal in various domains	[L3][CO3]	**[12M]**
7	(a)Define pyrolytic oil?	[L1][CO2]	**[03M]**
	(b) Explain the manufacturing process of pyrolytic oils briefly	[L2][CO2]	**[09M]**
8	Discuss various applications and yields of pyrolytic oils – in detail	[L2][CO2]	**[12M]**
9	(a) Define Syngas ? How syngas is produced.	[L1][CO2]	**[06M]**
	(b) Mention primary applications of Syngas in various engineering fields	[L3][CO2]	**[06M]**
10	Write short notes on (i) Slow pyrolysis method (ii) Flash pyrolysis method (iii) Fast Pyrolysis	[L3][CO2]	**[12M]**

UNIT- III
Biomass Gasification

1	Write down the definition of gasifier. What are the classifications of various types gasifiers.	[L3][CO4]	**[12M]**
2	Explain the design, construction and operation of Downdraft gasifier.	[L3][CO4]	**[12M]**
3	Explain the design, construction and operation of updraft gasifier.	[L3][CO4]	**[12M]**
4	Explain the design, construction and operation of fluidized bed gasifier.	[L3][CO4]	**[12M]**
5	Explain Gasifier burner arrangement for thermal heating in detail.	[L3][CO4]	**[12M]**
6	Draw Gasifier engine arrangement for production of Electric power and explain the methodology.	[L3][CO4]	**[12M]**
7	Explain the design, construction and operation of fixed bed system.	[L3][CO4]	**[12M]**
8	What are the overall Steps Involved in Biomass Gasification?	[L3][CO4]	**[06M]**
	What are the factors Affecting the Gasification Process?	[L3][CO4]	**[06M]**
9	What are the advantages and disadvantages of Various Biomass Gasification Technologies (Gasifiers) used	[L2][CO4]	**[12M]**
10	How gasifier output is utilized in Electrical Power Plants?	[L3][CO4]	**[12M]**

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UNIT-IV
Biomass Combustion

1	Write Short notes on Biomass stoves	[L3][CO5]	**[12M]**
2	Explain Design, Construction and Operation of Fixed bed combustor	[L2][CO5]	**[12M]**
3	Explain Design, Construction and Operation of Inclined Grate Combustor	[L2][CO5]	**[12M]**
4	Explain Design, Construction and Operation of Fluidized bed Combustor	[L3][CO5]	**[12M]**
5	Briefly discuss various types of Combustors	[L3][CO5]	**[12M]**
6	Write down the Fundamentals of Biomass Combustion	[L2][CO5]	**[12M]**
7	What is Biomass Combustion?	[L2][CO5]	**[02M]**
	What is the Biomass Combustion Mechanism?	[L3][CO5]	**[10M]**
8	What is Combustion Analysis? What Are the Combustion Analysis Factors?	[L3][CO5]	**[12M]**
9	What is meant by exotic design of Biomass Stove? Explain in detail	[L2][CO5]	**[12M]**
10	What Are the Combustion Reactors	[L3][CO5]	**[12M]**

UNIT-V
Properties of Biogas

1	Explain Design, Constructional features of Biogas Plant Technology	[L2][CO6]	**[12M]**
2	What is meant by Biomass resources? Classify biomass resources based on their application.	[L3][CO6]	**[12M]**
3	Discuss Biomass conversion processes	[L3][CO6]	**[12M]**
4	Write short notes on (i) Thermo Chemical Conversion (ii) Direct combustion of Biomass	[L2][CO6]	**[12M]**
5	(a)Classify the different types of Biogas plants.	[L3][CO6]	**[06M]**
	(b) Write down the various applications of biogass plants.	[L3][CO6]	**[06M]**
6	Explain the following in detail (i) Biomass gasification (ii) Pyrolysis & Liquefaction	[L3][CO6]	**[12M]**
7	Explain Alcohol production from Biomass	[L2][CO6]	**[12M]**

8	Write short notes on (i) Urban Waste to Energy Conversion (ii) Biomass Energy Programme	[L2][CO6]	**[12M]**
9	Explain the following in detail with respect to biomass plants (i) Bio-Chemical Conversion (ii) Anaerobic digestion	[L2][CO6]	**[12M]**
10	Explain Bio-diesel production in detail	[L3][CO6]	**[12M]**

PREPARED BY: Dr. Rahul Bhattacharjee

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