

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

Siddharth Nagar, Narayanavanam Road – 517583



QUESTION BANK (DESCRIPTIVE)

Subject: 20AG0724 - Solid Waste & By-Product Utilization Course & Branch: B.Tech - AGE

Year & Sem: III Year & II Sem

Regulation: R20

UNIT –I

INTRODUCTION OF SOLID WASTE MANAGEMENT

1	a	What is waste? Explain briefly about sources of waste.	[L1][CO1]	[6M]
	b	Discuss about advantages and disadvantages of waste management system.	[L3][CO1]	[6M]
2	a	What is recycling? Discuss about the benefits of recycling process.	[L1][CO1]	[6M]
	b	Discuss about quality of recycle materials.	[L3][CO1]	[6M]
3	a	Explain in detail about composting.	[L2][CO1]	[6M]
	b	Discuss about advantages and disadvantages of composting.	[L3][CO1]	[6M]
4	a	Explain incineration in solid waste management.	[L2][CO1]	[6M]
	b	Explain briefly about Solid waste management.	[L2][CO1]	[6M]
5		Explain about recovery of energy from municipal solid waste.	[L2][CO1]	[12M]
6		Discuss about the advantages and disadvantages of recycling process with examples.	[L3][CO1]	[12M]
7	a	Explain about land filling process in waste management.	[L2][CO1]	[6M]
	b	What are the Advantages and disadvantages of land filling?	[L1][CO1]	[6M]
8		Discuss about possible ways for controlling the solid waste.	[L3][CO1]	[12M]
9		Explain steps involved in effluent treatment.	[L2][CO1]	[12M]
10	a	Compare between by- product and waste.	[L4][CO1]	[6M]
	b	Explain food processing operation and associated waste.	[L2][CO1]	[6M]

UNIT –II
BIO-ENERGY

1	a	Explain in detail about bioenergy.	[L2][CO2]	[8M]
	b	Explain briefly about importance of bio mass.	[L2][CO2]	[4M]
2	a	Write about the classification of bio mass.	[L1][CO2]	[8M]
	b	Explain in detail about combustion process.	[L2][CO2]	[4M]
3	a	Write about bio fuels and their raw materials.	[L1][CO2]	[6M]
	b	Distinguish incineration and pyrolysis.	[L4][CO2]	[6M]
4	a	Explain in detail about thermo chemical conversion.	[L2][CO2]	[6M]
	b	Explain about liquefaction and gasification.	[L2][CO2]	[6M]
5		Explain wet processes in biomass conversion technologies.	[L2][CO2]	[12M]
6	a	Explain about fermentation.	[L2][CO3]	[6M]
	b	Explain about gasification and steam gasification.	[L2][CO4]	[6M]
7		Explain in detail about properties and characteristics of bio mass.	[L2][CO2]	[12M]
8	a	Write about chemical reduction and hydrogenation.	[L1][CO3]	[8M]
	b	Differentiate thermo and bio chemical conversion technologies.	[L4][CO3]	[4M]
9		Explain about the biomass conversion technologies.	[L2][CO3]	[12M]
10		Explain dry processes in biomass conversion technologies.	[L2][CO3]	[12M]

**UNIT-III
GASIFIERS**

1	a	Discuss about Gasification and Gasifier.	[L3][CO4]	[4M]
	b	List out Classification of Gasifiers.	[L1][CO4]	[4M]
	c	Discuss about Fixed bed and fluidized bed Gasifiers.	[L3][CO4]	[4M]
2		Write about problems in developments of Gasifiers.	[L1][CO4]	[12M]
3		Explain in detail about steps involved in gasification process.	[L2][CO4]	[12M]
4		Explain about the chemistry of gasification process.	[L2][CO4]	[12M]
5	a	Draw a flow chart for energy conservation routes and products from bio mass.	[L2][CO1]	[4M]
	b	Discuss about conversion alternatives of gasification.	[L3][CO3]	[8M]
6		Explain about producer gas and its utilization.	[L2][CO2]	[12M]
7		Explain Up- draft and down-draft Gasifier with neat sketch.	[L2][CO4]	[12M]
8		Explain in detail about different types of Gasifiers.	[L2][CO4]	[12M]
9		Explain Cross-draft Gasifier with neat sketch. What are the advantages and disadvantages of down draft Gasifier?	[L2][CO4]	[12M]
10		Explain in detail about fluidised bed Gasifier with neat sketch and what are the advantages of fluidised bed Gasifier?	[L2][CO4]	[12M]

**UNIT-IV
BIOGAS**

1	a	Discuss about Wet fermentation.	[L3][CO5]	[4M]
	b	Discuss about Dry fermentation.	[L3][CO5]	[4M]
	c	Explain about the movement in biogas plant.	[L2][CO5]	[4M]
2	a	Explain about phases of anaerobic digestion.	[L2][CO5]	[6M]
	b	Differentiate aerobic and anaerobic digestion.	[L4][CO5]	[6M]
3		Explain about the factors effecting gas generation in biogas plant.	[L2][CO5]	[12M]
4		Explain in detail about considerations for design of biogas digester.	[L2][CO5]	[12M]
5	a	Write about site selection for biogas plant construction.	[L1][CO5]	[8M]
	b	Explain about materials used for biogas production.	[L1][CO5]	[4M]
6	a	The following data are given for a family biogas digester suitable for the output of five cows; the retention time is 20 days, temperature 32 °C, dry matter consumed per day = 2kg, biogas yield is 0.24 m ³ /kg. The efficiency of burner is 60%, methane proportion is 0.6 heat of combustion of methane =32 MJ/m ³ Calculate: i) the volume of biogas digester ii) The power availability from the digester	[L3][CO5]	[6M]
	b	Discuss advantages and disadvantages of floating drum type biogas plant.	[L3][CO5]	[6M]
7	a	Explain constructional details of Deenabandu biogas plant.	[L2][CO5]	[6M]
	b	Discuss about advantages and disadvantages of floating drum type biogas plant.	[L3][CO5]	[6M]
8		Explain about fixed dome type biogas plant with neat sketch.	[L2][CO5]	[12M]
9		Explain about floating dome type biogas plant with neat sketch.	[L2][CO5]	[12M]
10		Calculate the volume of biogas digester suitable for the output of four cows, and the power available from the digester. Retention time is 20 days, temperature 30 °C, dry matter consumed 2 kg/day, biogas yield 0.24 m ³ /kg, burner efficiency is 60%, and methane proportion is 0.8. Heat of combustion of methane may be assumed to be 28 MJ/m ³ at STP,	[L3][CO5]	[12M]

UNIT-V
BRIQUETTING OF BIOMASS

1	a	What is Briquetting? Write about importance of shredding in briquetting process.	[L2][CO6]	[4M]
	b	Discuss about factors effecting of briquetting process.	[L3][CO6]	[4M]
	c	What are the advantages and disadvantages of briquettes?	[L1][CO6]	[4M]
2	a	Draw a flow diagram for ethanol production from sugar cane	[L2][CO6]	[4M]
	b	Write about machines used for biomass shredding	[L1][CO6]	[8M]
3	a	Write the Procedure for production of bio diesel from Jatropha	[L1][CO3]	[6M]
	b	Explain piston type briquetting machine with neat diagram	[L2][CO6]	[6M]
4		Draw a flow diagram for bio diesel production from Pongamia	[L2][CO3]	[4M]
5	a	Explain screw type briquetting machine with neat diagram	[L2][CO6]	[8M]
	b	Draw a flow diagram for ethanol production from corn	[L2][CO3]	[6M]
6	a	Explain working principle of piston type briquetting machine with neat diagram	[L2][CO6]	[8M]
	b	Write about benefits of briquetting	[L1][CO6]	[4M]
7	a	Explain about different types of shredding machines are used in briquetting process	[L2][CO6]	[8M]
	b	Explain about applications of briquetting	[L2][CO6]	[4M]
8	a	Write the procedure for production of bio diesel from pongamia	[L1][CO3]	[6M]
	b	Give a brief explanation about briquetting process	[L1][CO6]	[6M]
9		Write a procedure for ethanol production from sugar cane.	[L1][CO3]	[12M]
10	a	Draw a flow diagram for bio diesel production from Jatropha.	[L2][CO3]	[6M]
	b	What are the steps used for briquetting process.	[L1][CO6]	[6M]

PREPARED BY: SNEHA GOUDAR