QPC: RN20BTECH659 AR 20 Reg. No | | | | | | | | | | |

GIET UNIVERSITY, GUNUPUR – 765022

B. Tech (Seventh Semester – Regular) Examinations, November – 2023

BPECH7020 - Integrated Solid Waste Management

(Chemical)

Time: 3 hrs Maximum: 70 Marks

Answer ALL Questions

The figures in the right hand margin indicate marks.

PART – A: (Multiple Choice Questions) **(1 x 10 = 10 Marks)**

Q.1. Answer *ALL* questions		[CO#]	[PO#]
a.	The organic material of the solid waste will decompose	CO1	PO2
	(i) By the flow of water (ii) By the soil particles		
	(iii) By the action of microorganisms (iv) By oxidation		
b.	Which of the following is the oldest and the most common method used to dump solid wastes?	CO2	PO2
	(i) River (ii) Ocean		
	(iii) Landfill (iv) None of the above		
c.	Biomass is used in the production of	CO2	PO2
	(i)Fibres (ii) Chemicals		
	(iii) Transportation fuels (iv) Biochemical		
d.	Which of the following is a product of biomass gasification?	CO2	PO2
	(i) Hydrogen (ii) Steel		
	(iii) Carbon (solid) (iv) Iron		
e.	Which country produces the most e-waste per year?	CO4	PO3
	(i) India (ii) China		
	(iii) USA (iv) France		
f.	Why mismanagement of battery waste is harmful?	CO3	PO3
	(i) Texture (ii) Heavy metals		
	(iii) Plastics (iv) Odor		
g.	The _____ process determines whether exposure to a chemical can increase the incidence of adverse health effect.	CO3	PO3
	(i) Hazard identification (iii) Exposure assessment		
	(ii) Toxicity assessment (iv) Risk characterization		
h.	Which of the following is not a Biomedical waste?	CO4	PO3
	(i) Animal waste (ii) Microbiological waste		
	(iii) Chemical waste (iv) Domestic waste		
i.	The burning of solid waste is not recommended because	CO2	PO1
	(i) It is very costly (ii) It requires a lot of space		
	(iii) It requires modern technologies (iv) It causes several environmental issues		
j.	Under which rule of Government, guidelines for solid waste management are followed today?	CO4	PO3
	(i) Solid waste rules, 2000 (ii) Solid waste rules, 2016		
	(iii) Municipal Solid waste rules, 2000 (iv) Municipal Solid waste rules, 2016		

PART – B: (Short Answer Questions) **(2 x 10 = 20 Marks)**

Q.2. Answer ***ALL*** questions		[CO#]	[PO#]
a.	Is Biogas is a good domestic fuel ?Justify.	CO1	PO2
b.	Differentiate between the Municipal and Industrial wastes.	CO2	PO2
c.	Analyse the Potential application of Biomass as value added products.	CO3	PO2
d.	Which ones is the simplest and most Common Method Used in the Cities to Dump the Wastes That Are Collected?	CO2	PO1
e.	Why Do Plastics Fall Under a Difficult Material to Recycle?	CO2	PO1
f.	Write the sources of biomedical waste.	CO2	PO2
g.	Write the impacts of hazardous-waste on the living organisms.	CO3	PO2
h.	Differentiate between community bins and curbside waste collection.	CO3	PO2
i.	List advantages and disadvantages of sanitary land fill.	CO2	PO1
j.	Identify the feedstocks for biomass energy production? How are they processed?	CO3	PO1

PART – C: (Long Answer Questions) **(10 x 4 = 40 Marks)**

Answer ***ALL*** questions		Marks	[CO#]	[PO#]
3. a.	Explain the sources and types of solid wastes.Distinguish the solid waste according to their types of waste generator.	6	CO1	PO1
b.	Classify Waste Minimization (WM) Techniques.	4	CO2	PO2
	(OR)			
c.	Justify which would you prefer between recycling and source reduction?	6	CO2	PO2
d.	Describe the effects on improper disposal of solid waste on human health and Factors affecting Generation of Solid wastes.	4	CO2	PO1
4. a.	Explain about the process of production of landfill gas using bacterial decomposition method with neat flow sheet.	5	CO3	PO2
b.	Explain Resource Recovery and Processing of MSWM.	5	CO3	PO2
	(OR)			
c.	Analyze the techniques involved in resource recovery.	5	CO4	PO3
d.	Explain in detail the Onsite processing / Segregation.	5	CO3	PO3
5. a.	Describe different category for classification of hazardous waste?	6	CO4	PO1
b.	Enumerate the characteristics of hazardous waste.	4	CO2	PO2
	(OR)			
c.	Describe Anaerobic Digestion (AD), Incineration, Pyrolysis, Anaerobic digestion.	5	CO4	PO2
d.	Enumerate about the functional elements of solid waste management.	5	CO3	PO2
6. a.	Explain the collection methods of biomedical waste.	5	CO3	PO2
b.	Explain the adverse health and environmental impacts due to improper handling of biomedical waste.	5	CO3	PO2
	(OR)			
c.	State the key role of public in solid waste management.	4	CO2	PO1
d.	Explain the segregation process of biomedical waste.	5	CO4	PO1

--- End of Paper ---