Total No. of Questions: 6 *Total No. of Printed Pages:3*

Enrollment No.....

Faculty of Engineering

End Sem (Odd) Examination Dec-2019

ME3EE07 Bio and Solid Waste Management

Programme: B.Tech. Branch/Specialisation: ME

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

Q.1 i. Which of the following is not the objective of solid waste management? **1**

(a) Recycling (b) Storage or collection

(c) Stop waste generation (d) Disposal

ii. The term ISWM refers to: **1**

(a) International Solid Waste Management

(b) Integrated Solid Waste Management

(c) Integrated Solid Waste Machine

(d) International Solid Waste Mechanism

iii. Feature(s) of Zero Waste Management is (are): **1**

(a) Separation of garbage at the source

(b) Separate collection of each kind

(c) Involvement of the community

(d) All of these

iv. The largest single component of municipal solid waste (MSW) is: **1**

(a) Plastics (b) Paper and paper products

(c) Disposable diapers (d) Yard wastes

v. Problem of solid waste disposal can be reduced through……. **1**

(a) Recycling (b) Lesser pollution

(c) More timber (d) Population control

vi. There are _____ ways to treat waste thermally. **1**

(a) 5 (b) 3 (c) 2 (d) 6

vii. How many types of landfills are there? **1**

(a) 3 (b) 2 (c) 5 (d) 4

P.T.O.

viii. Which gas produced in open dumps from the decomposition of biodegradable waste? **1**
(a) Ethane (b) Methane (c) Propane (d) Butane

ix. Making new containers from crushed glass helps to _____ **1**
(a) Save materials (b) Save fuel
(c) Both of these (d) None of these

x. Metals are produced as waste in industries like _____ **1**
(a) Skiing (b) Mining
(c) Electroplating (d) Digging

Q.2 i. What is solid waste management? **2**
ii. Explain different Sources of emergence of solid waste. **3**
iii. What do you mean by solid waste quantification? Explain the process of solid waste quantification. **5**
OR iv. Write the name of various functional elements of solid waste management system. Explain any two in brief. **5**

Q.3 i. Why the information on the properties of solid waste is important. **2**
ii. Explain the chemical composition of solid waste. How they are evaluated. **8**
OR iii. Explain Hauled container system and stationary container system for solid waste collection. **8**

Q.4 i. What are the basic objectives of waste utilization? **3**
ii. What do you mean by 4R's in waste minimization? Explain in brief. **7**
OR iii. Explain anaerobic digestion technique for energy generation from solid waste? **7**

Q.5 i. What is Leachate? **2**
ii. What is landfilling? Explain the area method and trench method of landfilling. **8**
OR iii. Explain the role of governmental and non – Governmental organizations in solid waste management. **8**

Q.6 Attempt any two:
i. Explain the methods of power generation using municipal solid waste. **5**
ii. How municipal solid waste can be used as constructional materials. **5**
iii. How Public Private Partnership (PPP) is helpful in Solid Wastes Reuse and Disposal. **5**

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Marking Scheme
ME3EE07 Bio and Solid Waste Management

Q.1	i.	Which of the following is not the objective of solid waste management? (c) Stop waste generation		**1**
	ii.	The term ISWM refers to: (b) Integrated Solid Waste Management		**1**
	iii.	Feature(s) of Zero Waste Management is (are): (d) All of these		**1**
	iv.	The largest single component of municipal solid waste (MSW) is: (b) Paper and paper products		**1**
	v.	Problem of solid waste disposal can be reduced through……. (a) Recycling		**1**
	vi.	There are _____ ways to treat waste thermally. (b) 3		**1**
	vii.	How many types of landfills are there? (a) 3		**1**
	viii.	Which gas produced in open dumps from the decomposition of biodegradable waste? (b) Methane		**1**
	ix.	Making new containers from crushed glass helps to _____ (c) Both of these		**1**
	x.	Metals are produced as waste in industries like _____ (c) Electroplating		**1**
Q.2	i.	Definition of solid waste management		**2**
	ii.	Explanation of three Sources of emergence of solid waste. 1 mark for each source	(1 mark * 3)	**3**
	iii.	Definition of solid waste quantification Process of solid waste quantification	2 marks 3 marks	**5**
OR	iv.	Name of various functional elements of solid waste management system Explanation of any two 2 marks for each (2 marks *2)	1 mark 4 marks	**5**
Q.3	i.	Importance of information on the properties of solid waste At least two points 1 mark for each	(1 mark * 2)	**2**
	ii.	Chemical composition of solid waste Any five points 1 mark for each (1 mark * 5) Evaluation of chemical composition	5 marks 3 marks	**8**
OR	iii.	Hauled container system Stationary container system	4 marks 4 marks	**8**
Q.4	i.	Objectives of waste utilization At least three points 1 mark for each	(1 mark *3)	**3**
	ii.	4R's in waste minimization		**7**
OR	iii.	Definition of anaerobic digestion Stages involved in anaerobic digestion	2 marks 5 marks	**7**
Q.5	i.	Definition of Leachate		**2**
	ii.	Definition of landfilling Area method Trench method of landfilling	2 marks 3 marks 3 marks	**8**
OR	iii.	Role of governmental organizations Role of non – Governmental organizations	4 marks 4 marks	**8**
Q.6		Attempt any two:		
	i.	Methods of power generation At least two methods 2.5 marks for each	(2.5 marks * 2)	**5**
	ii.	Any five municipal solid waste used in constructional materials 1 mark for each	(1 mark * 5)	**5**
	iii.	Advantages / Importance Public Private Partnership (PPP) Reuse Disposal	 2.5 marks 2.5 marks	**5**

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