Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

II SEMESTER M.TECH (INDUSTRIAL POLLUTION CONTROL)

END SEMESTER EXAMINATIONS, MAY 2016

SUBJECT: SOLID WASTE ENGINEERING & MANAGEMENT [CHE 558]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 100

Instructions to Candidates:

- Answer **ANY FIVE FULL** questions.
- Missing data may be suitably assumed.

1A.	Discuss about the functional elements that constitute the solid waste management (SWM) system.	**7**
1B.	Write a short note on the effects of climate and seasonal variations in SWM system.	**3**
1C.	What are ultimate and proximate analyses? Also mention the % dry weight composition of each element in typical solid waste.	**6**
1D.	Write a short note on working principle of an adiabatic bomb calorimeter with a neat diagram.	**4**
2A.	Discuss about the designs for larger transfer operations.	**6**
2B.	Write a short note on the movement of collection crew and collection vehicle routing.	**5**
2C.	Discuss about the cost analysis to determine the viability of transfer stations.	**3**
2D.	Discuss about any six disposal options available for the disposal of solid wastes.	**6**
3A.	What are the phases in the life-cycle of a landfill? Also write a short note on landfill processes.	**10**

3B.	How will you control the migration of leachate and landfill gas?	**5**
3C.	Discuss about the design and construction of a landfill.	**5**
4A.	Given that 100 ton/h of solid waste is applied to a rotary screen for the removal of glass prior to shredding. Determine the recovery efficiency and effectiveness of the screen based on the following experimental data: The percentage of glass in the solid waste = 10% Total weight of material in underflow = 15 ton/h Weight of glass in screen underflow = 9.1 ton/h	**8**
4B.	Write a short note on any two size reduction equipment with their neat diagram.	**8**
4C.	Draw a flow diagram which represents the semi-mechanical process for the recycling of glass.	**4**
5A.	Explain the stages involved in the composting process.	**5**
5B.	Discuss about the mass-burning incineration system with a neat diagram.	**7**
5C.	Write a short note on co-generation system used for energy recovery in incineration facilities with a neat diagram.	**3**
5D.	Define biogasification. What are all the components of a biogas plant?	**5**
6A.	How will you list the hazardous wastes and what are their characteristics?	**8**
6B.	Name any four disposal options of hazardous wastes.	**2**
6C.	Draw a schematic representation which represents the hierarchy of integrated waste management.	**3**
6D.	Discuss about the planning of integrated waste management system.	**7**

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