Sea	at No.:	Enrolment No	
		GUJARAT TECHNOLOGICAL UNIVERSITY M. E SEMESTER – II • EXAMINATION – SUMMER • 2013	
	•	code: 1723005 Date: 05-06-2013 Name: Environment and Safety Management	
Ti	me: 1	0.30 am – 01.00 pm Total Marks: 70 etions:	
		 Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks. 	
Q.1	(a)	A sanitary landfill is being designed to handle solid waste generated by Venkatapur town having a population of 1,00,000. The waste generation on the average is 0.3 kg/person/day. It is expected that the waste will be delivered by a truck to the landfill site on a 4 day/week basis. The mean density of the refuse spread is 100 kg/m³. The solid waste is spread in 1.5 m layers and compacted to 0.3 m. The landfill will use 0.15 m of soil for daily cover. An intermediate cover of soil of 0.2 m is used to complete the cell and a final cover 1.0 m over the stack of 2 cells is recommended. Calculate the following: 1. Annual volume required for the landfill. 2. Annual horizontal area covered by the solid waste.	07
	(b)	Discuss the construction and working of thermal incinerator with its advantages and disadvantages.	07
Q.2	(a)	What is e-waste? Give types of e-waste. List out various methods for e-waste treatment and disposal and explain any one in detail.	07
	(b)	Explain hydrometallurgical treatment process for recovery of metals from waste PCB s using conventional leachants with a neat sketch. OR	07
	(b)	Discuss the method of determining emissions of sulfur dioxide from stationary sources (EPA method 6).	07
Q.3	(a)	Discuss the selection criteria for storage and handling of hazardous material in underground tanks.	07
	(b)	What are the safety rules for transportation of hazardous material? Explain any one transportation route in brief.	07
		OR	
Q.3	(a)	What are pressure relief devices? Explain working of rupture disk with the help of neat sketch.	07
	(b)	List out the applications and performance characteristics of horizontal blow-down drum, cyclone separator and quench tank for emergency relief device effluent collection.	07
Q.4	(a)	What is exempted in SMPV rules? What are the special precautions to be taken	07

against accidents during repair in SMPV rules? **(b)** List out the steps for design of a gas incinerator. **07** OR (a) What are flame arresters? Discuss the basic principle, uses and applications of flame **Q.4** arresters. (b) List out and explain the selection criteria of flame arresters. 07 What is included in Pre-Audit activities and how it is carried out? **07** Q.5 (a) Explain Environment Audit methodology. 07 **(b)** OR (a) List out the steps for design of an interlock system for liquid samples. **07** Q.5 **(b)** What is the role of pollution detector equipment in industry? Explain principle and **07**

working of any one with a neat sketch.