

Prince of Songkla University

The Faculty of Engineering

Final Examination Semester 1

Year 2004

Date : 4 Oct 2004

Time : 13.30-16.30

Subject : 226-415 Pollution control and waste treatment

Room : R 300

Name :

Student code :

Part	1	2	3	4	5	Total
Full score	15	20	30	15	20	100
Score						

คำสั่ง

- นำ A4 เข้าห้องสอบได้ 1 แผ่น (ต้องเขียนด้วยลายมือตัวเองเท่านั้น)
- นำ Dictionary เข้าห้องสอบได้ ในกรณีที่ Dictionary สามารถบันทึกข้อมูลได้ ให้ลบหน่วยความจำที่เกี่ยวข้องกับเนื้อหาวิชานี้ ออกให้หมดก่อนเข้าห้องสอบ
- ห้ามนำตำราหรือเอกสารใด ๆ เข้าห้องสอบโดยเด็ดขาด
- ห้ามนำเครื่องคิดเลขเข้าห้องสอบ
- ข้อสอบนี้ มีทั้งหมด 5 ส่วน คะแนนเต็ม 100 คะแนน คะแนนแต่ละส่วนไม่เท่ากัน ตรวจสอบก่อนเริ่มทำ (ให้ทำในกระดาษคำตอบเท่านั้น ตอบนอกกระดาษ คำตอบไม่มีคะแนน)
- เขียน ชื่อ หรือ รหัส ในกระดาษคำตอบทุกหน้าก่อนเริ่มทำ เพื่อป้องกันความสับสน ในกรณีกระดาษคำตอบหลุดจากฉบับ

ทูลงการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น และพักการเรียน 1 ภาคศึกษา
โทษสูงสุดให้ออก

Signature

Name : Student Code :

Part 1. Fill the following sentences with the words **in the below table only**. Some words can be used more than once. Some words may not be used. (1 point each, total 15 points)

Recycling	Recovery	Reuse	Refuse
Useful	The oceans	A dump	Time
Cyclone	Sanitary landfill	Low	High
Trash	On land.	Leachate	Settling chambers
Liners	Garbage	Wells	Wet scrubber
Industrial solid waste	Spray	Competent	Mist
Natural-made	People-made	Greenhouse gases	Disposition
Municipal solid waste	After	Before	Establish

1. The ordinary household and commercial waste are called or sometimes
2. Larger items such as old refrigerators, tree limbs, mattresses, and other bulky items is normally called
3. is the process that reclaims the useful materials from the waste produced by the public.
4. The separation into different types of materials by the person who decides to produce the solid waste, the collection and subsequent reintroduction of this material into the public sector, is know as

Name : Student Code :

5. Source separation is only the first step in the process that must include collection, processing, transport, and eventually sale to an industry that then uses the material.
6. The only two realistic options for disposal of the solid waste are in and
7. In the U.S, the placement of solid waste on land is called The operation of it is simple and involves nothing more than making sure that the trucks empty at the proper spot.
8. The basic principle of a landfill operation is to prepare a site with to deter pollution of groundwater, deposit the refuse in the pit, compact it with specially built heavy machinery with huge steel wheels, and cover the material with earth at the conclusion of each day's operation.
9. processes occurring particulates include fungus spores, salt spray, smoke particles from forest fires, and dust from volcanic eruptions.
10. The simplest devices for controlling particulates are consisting of nothing more than wide places in exhaust flue where larger particles can settle out, usually with a baffle to slow the emission stream.
11. One of the disadvantage of bag filters is that are sensitive to temperatures and humidity.



Name : Student Code :

12. In sanitary landfills, liners are used to try to prevent the movement ofinto the groundwater.
13. The ISO certified organization shall establish procedures for the identification, maintenance andof environmental records.
14. The ISO certified organization shall review and revise, where necessary, its emergency preparedness and response procedures, in particular,the occurrence of accidents or emergency situations.
15. In the ISO certified company, personnel performing the tasks which can cause significant environmental impacts shall be on the basis of appropriate education and/or experience.

Supap

Name : Student Code :

Part 2. Match the following sentences with the words **in the below table only**. Some words can be used more than once. Some words may not be used. (1 point each, total 20 points)

Recycling	Environmental objective	Reuse	Cyclone
EMR	Belt filters	Bag filters	Spray tower or scrubber
Corrective action	preventive action	Sanitary landfill	Aerobic
Environmental target	Natural-made	Fume	HS
Smoke	mist.	Incineration or flaring	H ₂ S
Dust	spray	Corrective action	People-made
Adsorption	Continual improvement	Leachate	Mixed liquor
CO	NO ₂	Wells	CO ₂

Question

No.	Answer	Question
1		Rotten egg odor at low concentrations, odorless at high concentrations. Highly poisonous.
2		A solid particle, frequently a metallic oxide, formed by the condensation of vapor by distillation, or chemical reaction processes.
3		The method is used to treat air pollutant when an organic air pollutant can be oxidized to CO ₂ and water.
4		Liquids from the sanitary landfill that have extremely high pollutional capacity when they enter the groundwater.

Supap

Name : Student Code :

No.	Answer	Question
5		Action which is taken to eliminate the causes of actual non-conformances
6		A method which is used to bring the pollutant into contact with an efficient adsorber like activated carbon.
7		The sources of pollutants can be conveniently classified as stationary combustion, transportation, industrial process and solid-waste disposal sources
8		is made up to entrained solids particles formed as a result of incomplete combustion of carbon materials. Smoke particles have diameters from 0.05 to approximately 1 μ m.
9		The use of paper shopping bags for the disposal of trash in secondary use.
10		Liquid particle is formed by the condensation of vapors and perhaps by chemical reaction. They typically range from 0.5 to 3.0 μ m.
11		Liquid particle is formed by the atomization of a parent liquid. They settle out under gravity. The diameter is usually higher than 10 μ m.
12		Solid particles are entrained materials used in a mechanical operation, e.g., sand from sandblasting.
13		Gas reduces the oxygen-carrying capacity of the blood by combining with hemoglobin and forming carboxyhemoglobin.
14		The equipment which is used for controlling particulates operates like the common vacuum cleaner.
15		Solid particles which are occurred during the material being handled or processed, e.g., coal, ash, and cement.
14		The device which is the most popular, economical, and effective means of controlling particulates.

Name : Student Code :

No.	Answer	Question
15		An effective method for removing large particulates.
16		Action which is taken to eliminate the causes of potential non-conformances
17		Colorless and odorless. Product of incomplete combustion. Poisonous.
18		They are drilled around the landfill in order to check for groundwater contamination from leaking liners, and if such contamination is found, remedial action is necessary.
19		Process of enhancing the environmental management system to achieve improvements in overall environmental performance in line with the organization's environmental policy
20		Overall environmental goal, arising from the environmental policy, that an organization sets itself to achieve, and which is quantified where practicable

Sapapa

Name : Student Code :

Part 3. Fill the following sentences with suitable words. (2 points each, total 30 points)

1. The organization shall establish and maintain environmental management program for achieving its objectives and targets. The program shall include
.....
2. It shall require that all personnel, whose work may create a significant impact upon the environment, have received
3. The organization shall communicate to the interested parties.
4. The organization normally describe the core elements of the management system and their interaction in the document which is called
5. Any obsolete documents retained for legal and/or knowledge preservation purposes shall be
6. The objectives and targets of the company shall be in line with its
.....
7. The equipment used for monitoring the key characteristics of the significant impacts shall be
8. The individual or group concerned with or affected by the environmental performance of an organization is called



Name : Student Code :

9. The organization shall monitor and measure
of its operations and activities that can have a significant impact on the environment.

10. The records required for the ISO140001 system shall include
.....

11. An audit schedule shall be based on the environmental importance of the activity
concerned and the results of

12. The audit procedures shall cover,
..... and, as well as the
responsibilities and requirements for conducting audits and reporting results.

13. The top management shall review the EMS to ensure its continuing suitability,
..... and

14. The management review shall address the possible need for changes to
..... and other
elements of the environmental management system.

15. Sanitary landfills are not inert. The buried organic material decomposes anaerobically,
producing various gases, such as

*Supp**

Name : Student Code :

Part 4. Answer all questions. (5 points each, total 15 points)

1. What are the steps of Cleaner Technology?

.....
.....
.....
.....
.....
.....
.....

2. What is the responsibility of EMR?

.....
.....
.....
.....
.....
.....
.....

3. How can we control noise pollution at the source?

.....
.....
.....
.....
.....
.....
.....
.....

Suppa

Name : Student Code :

Part 5. If you are a member of Thai Airways International Public Co.,Ltd. The ISO14001 policy of the company is given below.

Thai Airways International Public Company Limited Environmental Policy

The Management of Thai Airways International Public Company Limited has established the company's environmental policy in order to ensure effective measures in dealing with the current environmental problems, which may have adverse effects on the community, country and the world as a whole. THAI will continue to protect and conserve natural resources and develop effective resource management techniques as well as promote greater awareness among, and provide up-to-date information to staff and customers.

Answer these following questions. . (5 points each, total 20 points))

- a) What is your comment on this ISO14001 policy?
- b) List 5 environmental impacts.
- c) List all important interested parties.
- d) Establish environmental objectives and targets.

Name : Student Code :

๘ GOOD LUCK

Dr. Klangduen Pochana

หน้าที่ 12/12

Suppa