Prince of Songkla University

The Faculty of Engineering

Midterm Examination Semester 1 **Year 2004**

Date : Aug 6, 2004 **Time : 13.30-16.30**

Subject : 226-415 Pollution control and waste treatment **Room : R200**

Name : .....

Student code : .....

Part	1	2	3	4	Total
Full score	**10**	**35**	**10**	**35**	**90**
Score					

Instruction

1. One A4 paper is allowed in examination room.
2. Books, other handouts and dictionary are **NOT** allowed.
3. Write your name **or** student code in every answer sheet.
4. Extra answer sheet is not allowed.
5. This examination paper contains 4 parts, 12 pages (including cover), please check your examination paper before starting.
6. Read instruction for each part carefully before starting.

ทุจริตในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น และพักการเรียน 1 ภาคศึกษา

โทษสูงสุดให้ออก

Supapo

Name :..... Student Code : .....

Part 1 Answer all questions. Please determine whether these following sentences are correct or not. One point (1 point) will be given for the right answer. Minus half point (-0.5 point) will be given for the wrong answer. (Total 10 points)

Question no.	Correct ✓	Incorrect ✗	Question
1			In the sequencing batch reactor process, RAS system is not required.
2			The trickling filter is one of the attached growth treatment processes.
3			Sludge is conditioning expressly to improve the dewatering characteristics.
4			Sludge storage must be provided to dewater the sludge treated by primary sedimentation.
5			Open drying beds are usually used to storage sludge before entering main sludge treatment process.
6			The anaerobic pond is normally deeper than aerobic pond.
7			Sludge degritting is normally used in the plants where the separate grit removal facilities are used ahead of the primary sedimentation tanks.
8			The thickening is generally accomplished by biological means.
9			The upflow anaerobic sludge-blanket (UASB) process is normally used to treat sludge from facultative pond.
10			In an aerobic lagoon, the solids are maintained in suspension.

Supapa

Name :..... Student Code : .....

Part 2 Explain these following words **in Thai**. Each question is 1 point. Total score for this part is 35 points.

No.	Question	Answer
2.1	Screening	
2.2	SBR	
2.3	aerated ponds	
2.4	Sludge Degritting	
2.5	UASB	
2.6	Activated sludge process	
2.7	Settleable solids	

Name :..... Student Code : .....

No.	Question	Answer
2.8	WAS	
2.9	Mechanically-cleaned bar racks	
2.10	Effluent	
2.11	Endogenous phase	
2.12	Ozonation	
2.13	Trickling Filter	
2.14	NTU	
2.15	Chemical conditioning	

Name :..... Student Code : .....

No.	Question	Answer
2.16	Acidogenesis	
2.17	Mixed liquor	
2.18	Slime layer	
2.19	BOD_5	
2.20	Sanitary landfill	
2.21	Sedimentation tank	
2.22	Oxidation ditch	
2.23	Algae Bloom	
2.24	PPP	

Name :..... Student Code : .....

No.	Question	Answer
2.25	H_2S	
2.26	COD	
2.27	Dissolved solids	
2.28	Grab sample	
2.29	Integrated sample	
2.30	Sludge Stabilization	
2.31	Turbidity	
2.32	Cooling Wastewater	

Name :..... Student Code : .....

No.	Question	Answer
2.33	Sludge Dewatering	
2.34	two-stage anaerobic digestion process	
2.35	Scum layer	

Name :..... Student Code : .....

Part 3 Answer all questions **in Thai** (technical terms are allowed as necessary). Each question is 1 point. Total score for this part is 10 points.

1. Why the growth rate of the bacteria cells during the log-growth phase is faster than the rate during the lag phase?

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2. What are the disadvantages of rotary drum thickener?

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3. What are the major differences of "Sludge Dewatering" and "Sludge Thickening"?

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4. Why RAS flow is required in the conventional activated sludge system?

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5. What is the purpose of adding lime into untreated sludge?

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6. What are the main functions of underdrain system in Trickling Filter process?

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7. What is the benefit of having "air capture" on the bio-disks in the RBC ?

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8. How is the oxygen supplied in the aerobic photosynthesis ponds?

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9. Explain the characteristic of primary sludge.

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10. What factors should be considered during designing period of wastewater treatment plant?

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Name :..... Student Code : .....

Part 4 Answer all questions **in Thai** (technical terms are allowed as necessary). Long answer is recommended for these following questions. Each question is 5 points. Total score for this part is 35 points

1. Please explain the microbiological growth on the surface of the media in the attached growth treatment process.

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2. Explain "Aerobic suspended-growth treatment process".

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Name :..... Student Code : .....

3. Please explain the microbiological process occurring in facultative ponds. (explain in descriptive sentences)

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4. List all advantages and disadvantages of disinfection with Ozone.

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5. What is the purpose of wastewater treatment?

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GOOD LUCK

Dr. Klangduen Pochana

Name :..... Student Code : .....

6. What is the purpose of sludge thickening process?

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7. How to reduce wastewater problem in PSU?

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GOOD LUCK

Dr. Klangduen Pochana