

DEPARTMENT OF CHEMICAL ENGINEERING
FACULTY OF ENGINEERING
PRINCE OF SONGKLA UNIVERSITY

Final Examination : 2nd Semester

Academic year : 2007

Date : February 28th, 2008

9:00 – 12:00, Room : R300

Subject : 230-591 Special Topic in Chemical Engineering (Renewable Energy and Renewable Material Technologies)

ทฤษฎีในการสอบ โทษนั้นดำปรับตกในรายวิชานั้น หรือ พักการเรียน
1 ภาคการศึกษา และ โทษสูงสุดคือ ให้ออก

Rules

1. **Do not** bring this exam paper out of the exam room.
2. All book, class material and calculator model are allowed.
3. **No talking or borrowing** during taking the exam.
4. Answer every question in **THAI**

Name.....

Student ID.....

Total score = 100

You got

This exam paper has 7 pages including this page.

ให้ตอบทุกข้อเป็นภาษาไทย (อนุญาตให้เขียนศัพท์ทางวิชาการเป็นภาษาอังกฤษได้)

Pim-pahn Meye
February 18th, 2008

1. (15 points) What is landfill and how to produce fuel from the landfill?

2. (20 points) Consider nuclear power plant technology.

2.1 (5 points) Compare fuel mass required to produce a unit of power from nuclear power plant to that from combustion process.

2.2 (5 points) Is it easy for terrorists to attack a nuclear reactor and why?

2.3 (10 points) Do you think Thailand should have our own nuclear power plant and why?

3. (15 points) Conclusively explain the publication of Pengmei Lva, *et al.* (Topic of Bio-syngas Production from Biomass Catalytic Gasification)

4. (15 points) Conclusively explain the publication of S. Manish, *et al.* (Topic of Comparison of Biohydrogen Production Process)

5. (20 points) Consider solar cell technology.

5.1 (15 points) What is fuel cell and how it works?

5.2 (5 points) What are n-type silicon and p-type silicon?

6. (15 points) Consider fuel cell technology.

6.1 (5 points) What are fuel cell benefits?

6.2 (10 points) How are oxygen ion conductor electrolyte and hydrogen ion conductor electrolyte different? And give examples of their operating system.