PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination: Semester 1   Academic Year: 2009

Date: 29/09/2009   Time: 13:30-16:30

Subject: 225-385 Principles of Engineering Economics   Room: R300

Instructions

- There are 6 questions and 2 extra questions (8 pages).
- Total score is 105.
- Try to answer all questions.
- Dictionary, calculators, books and lecture-notes are allowed.

ลูกพระบิดามีศักดิ์ศรี ยอมติด E ดีกว่าทุจริต

ข้าพเจ้าจะซื่อสัตย์ในการสอบ

(คะแนนเป็นของนอกกาย ไม่รีไทร์หาใหม่ได้)

ลงชื่อ...ตอน...........

ทุจริตในการสอบโทษขั้นต่ำคือปรับตกในรายวิชาที่ทุจริต และพักการเรียน 1 ภาคการศึกษา

Good luck

Sakesun Suthummanon

Question	Score	
1	10	
2	25	
3	10	
4	10	
5	15	
6	30	
Extra 1	2	
Extra 2	3	

Name........................... ....Code...............

Question 1: Each alternative has a 20 year useful life with no salvage value. If the minimum attractive rate of return is 7%, which alternative should be selected? (ใช้วิธี Present worth Analysis)
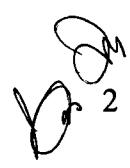
	A	B	C
initial investment	50000	22000	15000
Annual net income	5093	2077	1643
Computed rate of return	8%	7%	9%

Answer ....

PW of A...............................

PW of B...............................

PW of C...............................

Name................................. ....Code..............

Question 2: The following information is provided for three mutually exclusive alternatives that have 20 year useful lives. If MARR is 7% which alternative should be selected? (ใช้วิธี Incremental Analysis)

	A	B	C
initial investment	50000	22000	15000
Annual net income	5093	2077	1643

Answer ....

3

Question 3: A city plans a pipeline to transport water from a distant watershed area to the city. The pipeline will cost $8 million and have an expected life of seventy years. The city anticipates it will need to keep the water line in service indefinitely. Compute the capitalized cost (เงินลงทุนนิรันดร์, PW-C) assuming 7% interest.

Answer ....

Question 4: A manufacturer is contemplating the purchase of an additional forklift truck to improve material handling in the plant. He is considering two popular models, the Convairs T6 and the FMC 340. The relevant financial data are shown below. His minimum attractive rate of return (MARR) is 12%. Which model is more economical? (ใช้วิธี Annual worth Analysis)

Model	First cost	Life (years)	Salvage Value	Annual operating cost
Convairs T6	$20,000	6	$2,000	$8,000
FMC 340	29,000	7	4,000	4,000

Answer ....

AW of Convairs T6...............................

AW of FMC 340..............................

Question 5: A project is being considered by Hatyai city transportation department. The existing two-lane bridge is expensive to maintain and creates a traffic bottleneck. The new bridge can be constructed at a cost of $300,000, and estimated annual maintenance costs are $10,000. The existing bridge has annual maintenance cost of $18,000. The annual benefit of the new four-lane bridge to motorists, due to the removal of the traffic bottleneck, has been estimated to be $25,000. Construct a benefit-cost analysis, using MARR of 10% and study period of 25 years, to determine whether the new bridge should be constructed.

Answer ....

B/C = ...

Question 6: A new minor league baseball team is coming to town and the owners have decided to build a new stadium, either small or large. The success of the team with regard to ticket sales will be high, average and low, with probabilities of 0.60, 0.20 and 0.20, respectively. If demand for tickets is high, the large stadium would provide a payoff of approximately $20 million. If ticket sales are low, the loss on the large stadium would be $5 million. If ticket sales are average, the profit on the large stadium would be $5 million. If a small stadium is constructed, and ticket sales are low, the payoff is $500,000 after deducting the cost of construction. If ticket sales are high, the team can choose to build an upper deck, or to maintain the existing facility. Expanding the stadium in this scenario has a payoff of $10 million, whereas maintaining the same number of seats has a payoff of only $3 million. If ticket sales are average, the profit on the small stadium would be $7 million.

      a) Draw a decision tree for this problem.
      b) What should management do to achieve the highest expected payoff?

Name.................................... ....Code..............

Extra 1: ม.อ. ย่อมาจาก..

Extra 2: เขียนอะไรก็ได้ที่อยากจะบอกผู้สอนรายวิชานี้