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PRINCE OF SONGKLA UNIVERSITY FACULTY OF ENGINEERING

Mid-term Examination: Semester 2

Date: December, 25, 2004 Subject: 225-346 Work Study Academic Year: 2004 Time: 9.00-12.00

Room: R 300

Instructions

- There are 9 questions (plus 2 extra questions)
- Answer all questions.
- Dictionary, calculators, books and lecture-notes are allowed.
- Total score is 100 (plus 5 extra points).
- Show all your works

ด้วยเกียรติและศักดิ์ศรี	ข้าพเจ้าจะซื่อสัตย์ในการสอบ
ลงชื่อ	•••••

ทุจริตในการสอบโทษขั้นต่ำคือปรับตกในรายวิชาที่ทุจริต และพัก การเรียน 1 ภาคการศึกษา

Good luck Sakesun Suthummanon

1. How is time study and method engineering related? (3 points)

2. How does the flow process chart differ from the operation process chart? (3 points)

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3.	When is it advisable to construct a man machine chart? (3 points)
4	How does the cong process short differ from the man machine short? (2 points)
4.	How does the gang process chart differ from the man machine chart? (3 points)
5	Why is it necessary to construct process charts from direct observation, as
Э.	opposed to information obtained from the foreman? (3 points)

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6. For the lab assignment #2 and #3, you have already visited the PSU post office and observe a serviced provided. Describe the changes that your group recommended for providing the services. (10 points)

Note: You do not need to show any chart or diagram.

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- 7. For the lab assignment #2 and #3, you have already visited the PSU Petrol station to observe their services. Prepare process chart and flow diagram for the full service for both:
 - 1. present method
 - 2. improved method

(15 points)

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8. Assume that the man-machine situation for a food company is presented in figure 1 (Plan A) and figure 2 (Plan B). The relevant costs are:

Operator's wage = \$6 per hour
Helper's wage = \$3.50 per hour
Machine A's cost = \$10.00 per hour
Machine B's cost = \$14.50 per hour
Price of product = \$3.00 per piece

Under this circumstance, which plan should be selected? (30 points)

Time	Operator	Machine
2	Make ready 1 st unit	Idle
4		Working 1 st unit
6	Idle	
8	Put away 1 st unit	Idle
10	Make ready 2.nd unit	
12		Working 2 nd unit
14	Idle	
16	Put away 2 nd unit	Idle

Figure 1. Man – Machine Chart- Machine A, Plan A

Time	Operator	Machine	Helper
2	Make ready 1 st unit	ldle	
4		Working 1 st unit	ldle
6	ldle		
8	Make ready 2 nd unit	ldle	Rut away 1 ^{et} unit
10		Working 2 nd unit	ldle
	Idle	Working 2 nd unit	
14	Make ready 3. rd unit	ldle	Put away 2 nd unit
16	ldle	Working 3 rd unif	ldle

Figure 2. Man – Machine Chart- Machine B, Plan B

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- 9. How many machines should be assigned to an operator when:
 - 1. Loading time on one machine is 0.5 minute
 - 2. Walking time between machine is 0.5 minute
 - 3. Machine time is 3 minutes
 - 4. Unloading time is 0.5 minute
 - 5. Operator rate is \$10.00 per hour
 - 6. Machine rate is \$50.00 per hour
 - 7. Product price is \$5.00 per piece

(30 points)

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Extra credit A (1 point): Who 346 lab?	at is the official name	of the room where we have 22	5-
Extra credit R (4 points): Lis	st all the equipments v	ou used for the recent lah	
Extra credit B (4 points): Lis	st all the equipments ye	ou used for the recent lab.	