

PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Midterm Examination : Semester II

Academic Year : 2008

Date : 27 December 2008

Time : 01:30 - 04:30 PM

Subject : 225 - 344 Work Study and Productivity Improvement

Room : Robot

ทูลจรดใการสอบ โทษัันต่ำปรบตคใรรายวชานััน และพัทการเรยน 1 ภาคการศกษา

Directions:

1. Lecture notes, textbooks, electronic handheld calculator and dictionary are permitted.
2. You have to fill your name, surname, and ID on this page and fill only your name on the top right of the other pages.
3. You can use pencil to do the exam but do not use "HB" pencil (2B is preferred).
4. The total score = 35 points.

(Thai letter)

First name Mr./Miss Last name

Student ID

Score

Question no.	points	Your points
1	8	
2	5	
3	5	
4	5	
5	8	
6	4	
	35	

The document is prepared by Asst. Prof. Charoen Jaitwijitra



1. Write your answers in the blank of the following questions (1.1 – 1.8):
(8 points)

1.1. What is the name of a chart which is used to record the movement of a worker for the following activities; operation, transportation, delay, and hold?

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1.2. What is another name of outline process chart?

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1.3. What is the name of a chart which is used for tracing the material transportation throughout the process?

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1.4. What type of the following charts which is used to record the movement of human body in the most rough movement:- Simo chart, Two-hand process chart, Activity chart?

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1.5. What type of the following charts requires time scale:- Two-hand process chart, Activity chart, Flow process chart, Travel chart?

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1.6. What is the name of a chart used for recording the activities of more than one subject on a common time scale to show their interrelationship?

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1.7. What is the name of a chart in which the activities of a worker's hands are recorded in their relationship to one another?

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1.8. Left- and right-hand chart may be called Chart.



2. (5 points) Write T or F in the blanks of the following questions. “T” = True, when the context is right, and “F” = False, when the context is wrong.

- 2.1. The maximum working area is the area in which the worker sweeps his/her lower arms over the table.
- 2.2. Microchronometer is an outmoded spring-driven, fast-moving clock capable to indicating time to 1/2000 of a minute.
- 2.3. “Operation chart” is also called “Outline process chart”.
- 2.4. Gravity feed bin is use for dropping material into it.
- 2.5. While using computer’s keyboard, operative moves his/her fingers without moving wrist.
- 2.6. Two-hand process chart is a special type of Flow process chart.
- 2.7. The full name of the “Simo” chart is Simplify Motion chart.
- 2.8. Turning the handwheel of a machine is an example of ballistic movement.
- 2.9. A device such as “go – no go gage” helps worker verify (or inspect) the sizes of sample parts quicker than measuring their exact sizes with a scaled device (vernier caliper)
- 2.10. Momentum should be applied to assist the worker, especially when the worker tries to overcome it by muscular effort.

3. A company manufacturing speakers (ลำโพง) for personal computer sold one of its models (model S) for 400 Baht per unit in last year, during which time (ในช่วงเวลาดังกล่าว), the company sold 1,000 units of this model. The total cost per unit is 370 baht.

3.1. (2 points) Compute the total profit for model S last year.

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ชื่อไทย(ห้ามกรอกรหัส).....

3.2. (3 points)This year the company was able to reduce the total cost per unit by 10 Baht (because the company improved the total productivity). Suppose (สมมติว่า) the company wants to earn the same profit margin as last year, what is the new selling price for this year?

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4. A dressmaker (ช่างตัดเสื้อ) produced two shirts per day (ten hours) with five yards of textile fabric. Later, the work method was then improved, she could produced three shirts and used seven yards of material by the same working time.

4.1. (2 points)Compute the labor productivity before and after improvement.

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4.2. (3 points)How many percent of material productivity increase (or decrease)?

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5. A customer purchasing a cup of coffee in a Seven Eleven grocery. The following continuous events are occurred:
- a) Customer asks for 1 cup of coffee. At the same time the operator listen to order (that is he is working), and coffee grinder (เครื่องบดกาแฟ) is idle. This event needs for 5 seconds.
 - b) Operator gets coffee and put in machine, start machine. At the same time, customer is waiting and machine is idle. This event needs for 10 seconds.
 - c) Machine grinds coffee. At the same time, customer is still waiting and operator is idle. This event needs for 15 seconds.
 - d) Operator stops machine, place coffee in a cup. At the same time, customer is still waiting and machine is idle. This event needs for 12 seconds.
 - e) Customer receives coffee, pays money and receives change (เงินทอน). At the same time the operator gives coffee to customer, receives money and makes change. The machine is idle. This event needs for 15 seconds.

5.1. (5 points)Construct multiple activity chart. (เขียนในหน้าถัดไป และเขียนให้ถูกสัดส่วนของเวลาด้วย)

ชื่อไทย(ห้ามกรอกรหัส).....

Time	Customer	Operator	Coffee Grinder
10			
20			
30			
40			
50			
60			
70			
80			
90			
100			



ชื่อไทย(ห้ามกรอกรหัส).....

5.2. (3 points) Compute the utilization (in percent) of customer, operator, and coffee grinding machine.

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6. (4 points) Write the sequence (with Therblig symbols, e.g., TE, A, P, H, etc.) of spilling water from a teapot into a coffee cup. They are placed on a table. The distance between them is about 50 centimeters as shown in Fig.1. The activity starts when a man reaches his right hand to the teapot (with hot water inside it) and stops when the teapot is placed at its origin.

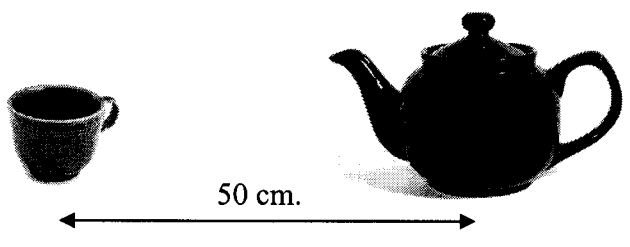


Fig. 1 A coffee cup and a teapot.

