

PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

Midterm Examination : Semester II

Academic Year : 2007

Date : 28 December 2007

Time : 13:30 - 16:30

Subject : 225 - 346 Work Study

Room : EE213

ทฤษฎีในการสอบ โทษขั้นต่ำปรับตกในรายวิชานั้น และพักการเรียน 1 ภาคการศึกษา

Directions:

1. Lecture notes, textbooks, electronic handheld calculator and dictionary are permitted to lead into examination room.
2. Solves ALL questions.
3. 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.
4. Pencil is allowed for writing answers.
5. The total score = 43 points.

First name Mr./Miss ..... Last name .....

Student ID .....

Score

Question no.	points	Your points
1	10	
2	3	
3	6	
4	10	
5	4	
6	10	
	43	

The examination papers are prepared by Asst. Prof. Charoen Jaitwijitra



1. Choose the answers from the following table to fill in the blanks of the question number 1.1 to 1.10. Each answer may be use more than once. You need not to write the word chosen from the table, only write the number (1 to 9) in front of these words.

1	Outline process chart	2	Flow process chart-Worker type	3	Travel chart	4	Flow process chart-Material type	5	Simultaneous chart
6	Two-hand process chart	7	Multiple activity chart	8	String diagram	9	Flow diagram		

- 1.1. .... use only two symbols (i.e., operation and inspection).
- 1.2. .... use only four symbols; operation, transportation, inspection, and storage.
- 1.3. .... is used for recording the complex movements between many workstations.
- 1.4. .... is used for recording the repetitive-short-cycle operations. Seventeen symbols are used for describe movement of an operator.
- 1.5. .... is a chart which is used for tracing the material transformation throughout the process.
- 1.6. .... is used for recording overall assembly process.
- 1.7. .... is a scale model using threads for tracing the path of workers or materials.
- 1.8. .... is used for recording the activities of more than one subject on a common time scale to show their interrelationship.
- 1.9. .... is a chart use for micromotion study.
- 1.10. .... is a chart in which the activities of a worker's hands are recorded in their relationship to one another.

2. Describe the difference between "permanent storage" and "temporary storage".

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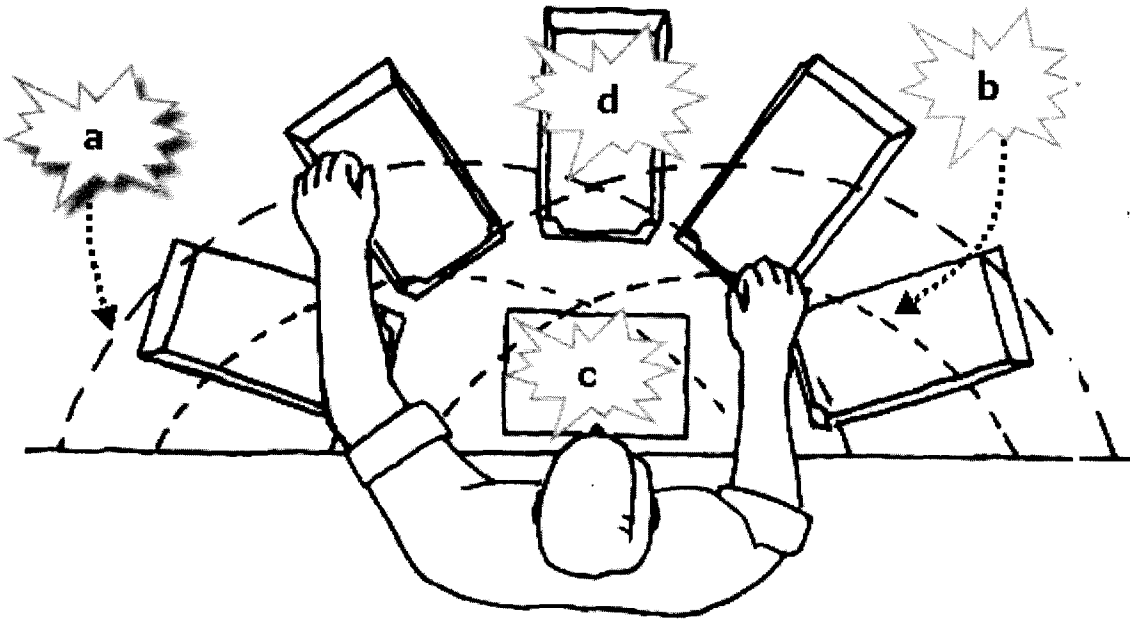
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3. Use the picture below to answer the question 3.1 – 3.3



3.1. Describe the meaning of arcs (เส้นโค้ง) which “a” and “b” are referred to.

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3.2. Describe the area “c” where the two inner arcs are intersect.

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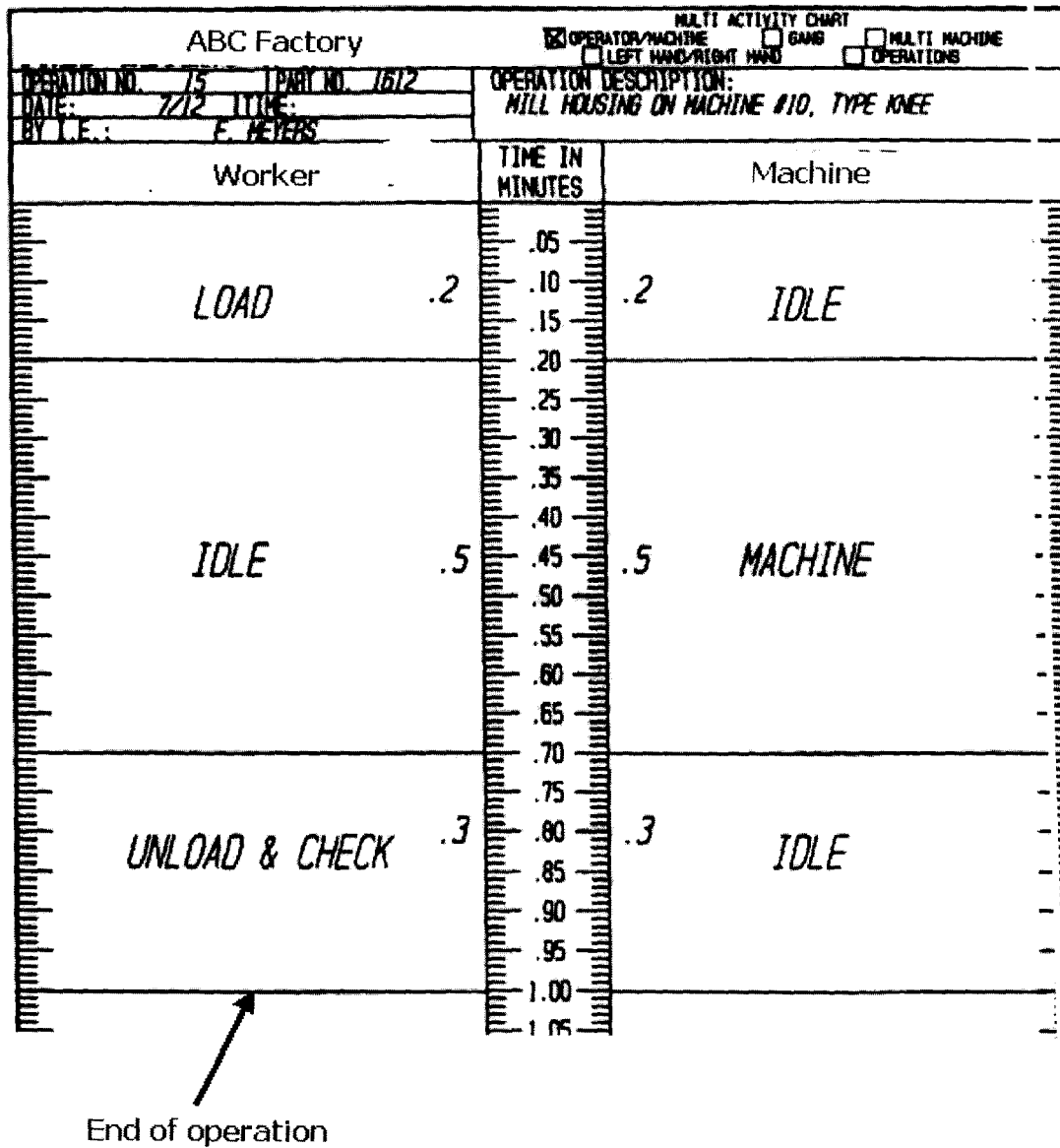
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Name .....

5. Use the following multiple activity chart to answer the question 5.1 and 5.2.



5.1. Compute the utilization of worker and machine.

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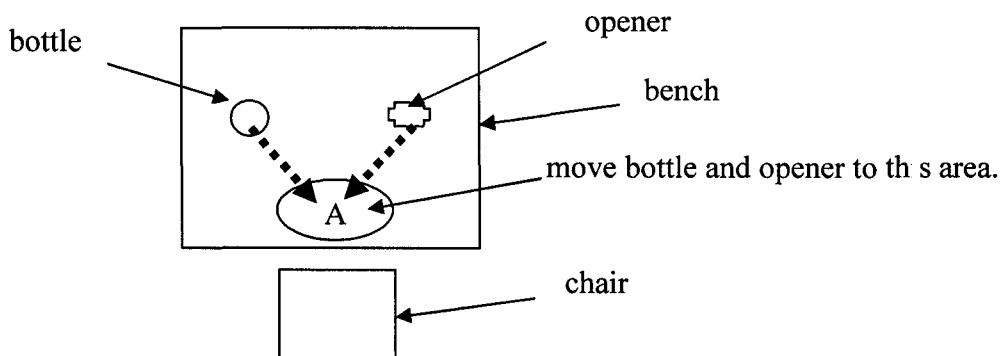
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5.2. Compute the ideal production rate in pieces per hour.

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6. Construct a Simo chart (without time scale) for a Coke-bottle's cap opening. The operator is sitting on a chair close by a bench and the bottle and a cap opener are placed on the bench as shown in the figure below. He places both hands on the edge of the bench near the area "A".



The operation is as the following steps; the operator moves both hands simultaneously, the right hand to the opener and the left hand to the bottle. Then he grasps and moves them to the area "A" simultaneously. The bottle is placed on bench but it is still hold by left hand. The opener is moved and positioned to the cap after the bottle is already placed. The opener is then used to open the cap. After that the opener is laid aside the bottle (while the left hand is still hold the bottle).

Notice that you must write the Therblig symbols (e.g., TL, St, G ) to the middle columns of the Simo chart.

Name .....

# Simo Chart

Left hand			Right hand