First name Mr/Ms …… lastname ……..

Student ID …….

Time Study Observation Form

Operation : Cut - to - size

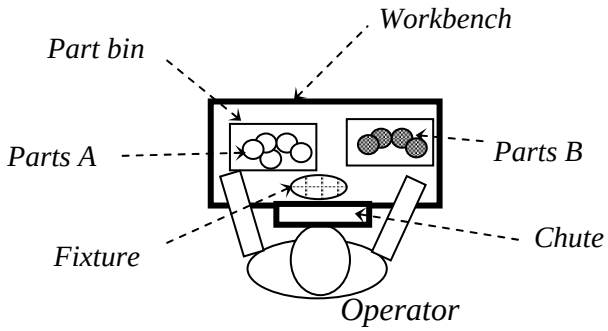
Elemement No. and Deacription		Set board into vise				Saw ends (A)				Remove board and stack				
Note	**Cycle**	**R**	**W**	**OT**	**NT**	**R**	**W**	**OT**	**NT**	**R**	**W**	**OT**	**NT**	
	1			55	578	100		60						
	2					100		60		105		60		
	3	110			605	100		60						
	4					100		60		90		80		
	5													
	6													
	7													

Summary

Total OT				
Rating	-		-	-
Total NT	1.183			1.350
No. of Observations	2		4	2
Average NT				
Allowance				
Elemental Std. time				
No. of Occurences	1		2	1
Standard time				
Total Standard Time (sum standard time for all elements):				

Foreign Elements	**Time Check**			**Allowance Summary**	
(A) 0.30 min interrupt, check saw blade.	Finishing Time		08:47.0	Personal Needs	5
	Starting Time		08:40.0	Fatigue	4
	Elapsed Time			Delays	5
	TEBS	1.50		Total Allowance %	14
	TEAF	0.60		Remarks :	
	Total Check Time				
	Effective Time				
	Ineffective Time				
	Total Recorded Time				
	Unaccounted Time				
	Recording Error %				

4. Write the sequence models and their parameter indices, and then calculate the times used for each sequence in TMU.



a) (2 points) The operator is sitting on chair and prompt to start his work as shown above. Then he move both hands simultaneously to part bins (left hand to left bin and right to right bin), grasp one part (both are light object) from each bins, move to fixture, place part A into fixture and place part B on top of A simulataneously (place parts to fixture by loose fit manner).

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b) (2 points) Continued from a), the operator uses right hand to grasp part A and B (which already formed to one piece) from fixture and move it to chute, then release it to chute.

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5. (5 points) Complete the time study observation form shown on next page,(fill in 31 cells which have elipse) based on continuous timing

- (1 points) Calculate average time per piece.

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- (1 points) Calculate standard time per piece.

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3. A new employee took 186 and 140 minutes to assemble the fourth and eight assemblies, respectively. The standard time for assembling this product is 100 minutes.
   - (2 points) Calculate this worker's learning curve.

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   - (2 points) Plot the learning curve that you just solved on log-log paper, which is attached in the last page of this paper. Do not forget to fill such details on the X and Y axes in order to make more complete answer.

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Part II- (5 problems worth 20 points) Write your answers on the blank area of each problems.

1. (3 points) If you are commanded to determine the *performance sampling* of the sheet-metal fabrication department, what should be done to convince supervisors and operators that *work sampling technique* can be used satisfactorily for measuring working time and nonworking time of operators and machines?

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2. Use the following data to calculate items as shown below

   Working = 36 Idle = 4

On the job time	480 min.
Production count	250 pieces.
Performance rating	110%
Overall allowances	14%

   - (1 points) Calculate the percent of working time.

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   - (1 points) Calculate actual working minutes.

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Part I – (5 points) Matching. Next to each definition in column A place the best term (letter only) from column B. The same answer can be used more than once, or none may apply (then use letter X).

Column A		Column B	
	1. Time for going to toilet falls under	A	effective time
	2. Standard time minus allowances =	B	ineffective time
	3. Time spent walking to and from the job to be time studied =	C	observed time
	4. Sum of foreign element times =	D	fatigue
	5. Normal time divides by the rating =	E	learning curve
	6. Sum of observed times =	F	motion study
	7. Any cessation in the work routine that does not occur in the typical work cycle	G	normal time
	8. A lessening in the capacity to work	H	normal operator
	9. Time the worker is not working	I	extra allowance
	10. A graphic presentation of the progress of production effectiveness over time	J	delay
	11. An operator who can achieve the established standard of performance when following the prescribed method and working at an average pace	K	check time
	12. Time recorded from a watch reading =	L	idle time
	13. Observed time multiply by rating =	M	personal needs allowance
	14. TEBS + TEAF =	N	constant element
	15. Use this time to determine wage payment	O	unaccounted time
		P	watch time
		Q	rating factor
		R	performance rating
		S	production study
		T	standard time
		X	none apply

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination : Semester II — Academic Year : 2002

Date : February 26, 2003 — Time : 1:30 - 4:30 PM

Subject : 225 - 346 Work Study — Room :

Before examinee do your job, please read this first.

1. You can bring the following materials into examination room :-
   - Lecture notes, textbooks.
   - Electronic calculator.
   - Electronic language translator.
2. Communication equipment, such as Personal Digital Assistant (PDA), mobile telephone, and laptop (notebook) computer, are NOT allowed.
3. You have to write answers to ALL questions.
4. You have to fill your name and ID on this page and on the top right of the remainder.
5. This exam is composed of 7 pages (log-log paper included) and total score = 25.

I have neither given nor received aid on this exam.
(ข้าพเจ้าจะไม่ให้ความช่วยเหลือ(ให้ลอกข้อสอบ)หรือรับความช่วยเหลือ(ลอกข้อสอบ)ใดๆ จากผู้เข้าสอบคนอื่นๆในการทำข้อสอบวิชานี้)

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signed (เซ็นชื่อ)

First name Mr/Ms …… lastname ……..

Student ID …… ☐ IE ☐ MfE

Score (fill by lecturer)

Part I		Part II		
points	earn	Q	points	earn
5		1	3	
		2	4	
		3	4	
		4	4	
		5	5	
			20		

Created by : Asst. Prof. Charoen Jaitwijitra