



FACULTY OF ENGINEERING AND BUILT ENVIRONMENT

SUPPLEMENTARY-EXAMINATION

DEPARTMENT	DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT
<u>PROGRAMME</u>	ND MANAGEMENT SERVICES ND OPERATIONS MANAGEMENT
<u>MODULE</u>	ORGANISATIONAL EFFECTIVENESS 2B
<u>CODE</u>	ORE22B2/OEF22B2
<u>DATE</u>	8 DECEMBER 2015
<u>DURATION</u>	: (SESSION 1) 08:00 - 11:00
<u>TOTAL MARKS</u>	100

<u>EXAMINER</u>	MR V. LUKONGA
<u>MODERATOR</u>	MIS. M. NEMARUMANE
<u>NUMBER OF PAGES</u>	9 PAGES

INSTRUCTIONS TO CANDIDATES:

- Please answer all questions.
- Calculators are allowed
- Question papers must not be handed in.
- This is a closed book assessment.
- Read the questions carefully and answer only what is asked.
- Number your answers clearly.
- Write neatly and legibly.
- Structure your answers by using appropriate headings and sub-headings.
- The general University of Johannesburg policies, procedures and rules pertaining to written exam apply.

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QUESTION 1

Define the following terms:

- 1.1. Work study. (3)
- 1.2. Method study. (3)
- 1.3. Work Measurement. (3)

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QUESTION 2

- 2.1. Sure your understanding of Machine Maximum Time by completing the following table. (8)

Machine Maximum Time			
			Not Worked

- 2.2. Use the case study provided below to calculate Machine Utilization Index (MUI), Machine Efficiency Index (MEI) and Machine Effective Utilization Index (MEUI).

During a 40-hour week plus 2 hours overtime, a certain machine in ABC factory was idle for 2 hours and 15 min, not operating for 23 min due to breakdowns, and not operating due to changeovers for 37 min. 110 spare parts were manufactured at 16 minutes per spare part.

1. Machine Utilization Index. (3)
2. Machine Efficiency Index. (3)
3. Machine Effective Utilization Index. (3)

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QUESTION 2

Ark Suppliers Pty is a major supplier of bags travel bags (TB), hand bags (HB), outdoor bags (OB) and laptop bags (LB). The most selling product is the hand bags and the least selling product is the outdoor bags. Generally the company is doing well in terms of sales, matter of fact the demand is higher than what the company can supply. For their last board meeting the directors decided try one of the two methods proposed in order to increase their production (**1**. See if they can improve current methods **2**. Buy more machines and employ more people).

They decide to go with option one because it's cheaper. The first step was to analyse the activities of only one manager in the company, who is responsible for all the departments. The company hired a work study practitioner Nick to do the study of analysing the manager's job in the office. The first thing he did was to familiarize himself with the job for a period of one month before starting with the main observations. On the 4th of April he started breaking the job in to elements. The study started at 8:20 but the first element was observed from 9:00.

The study starts when; the manager start counting the files from yesterday's reports, checks for any errors in the forms, switch on his computer, type in the data in the computer from all four forms, check if all the information is entered correctly in the computer, wait for the computer to save the information in the main saver, e-mail the feedback to all supervisors, wait for the computer to report that all mails were delivered, print the new forms (four forms), signing all the four forms at the bottom and the job **ends** by arrange the forms according to departments. This last element was completed at 12:00 and a TEAS of 30 minutes was recorded.

When his finished with his office work he visits all departments. His routine is as follows: Leaves his office and goes to clock machine CM (6metres towards door 1) to collect clocking cards (6 meters). Then he takes the cards to the secretary's desk SD (16 metres towards window 5) to capture the data from cards. He then starts the daily check-up routine of visiting all departments. The first department he goes to is the LB department (located 26metres from office towards window 4), before he goes to TB department (located 16metres from SH towards window 1) he goes to storage house (SH) which is located (located 12metres from secretary's desk towards window 3). From TB department he goes to HB department (located 20metres from TB towards door 2), then the he goes to OB department (located 24metres from HB towards window 2) and finish off his routine by checking the warehouse (WH) before he goes back to his office (OF).

- Connect WH and LB with 10 metres.

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Using the case study provided (the manager's office work) to draw a flow diagram (9marks) and answer question 2.1 – 2.10 (20 marks)

Note:

The times provided are in seconds

ALL answers must be in **2 decimal places**

Use the following scale to draw the flow diagram.

Scale:

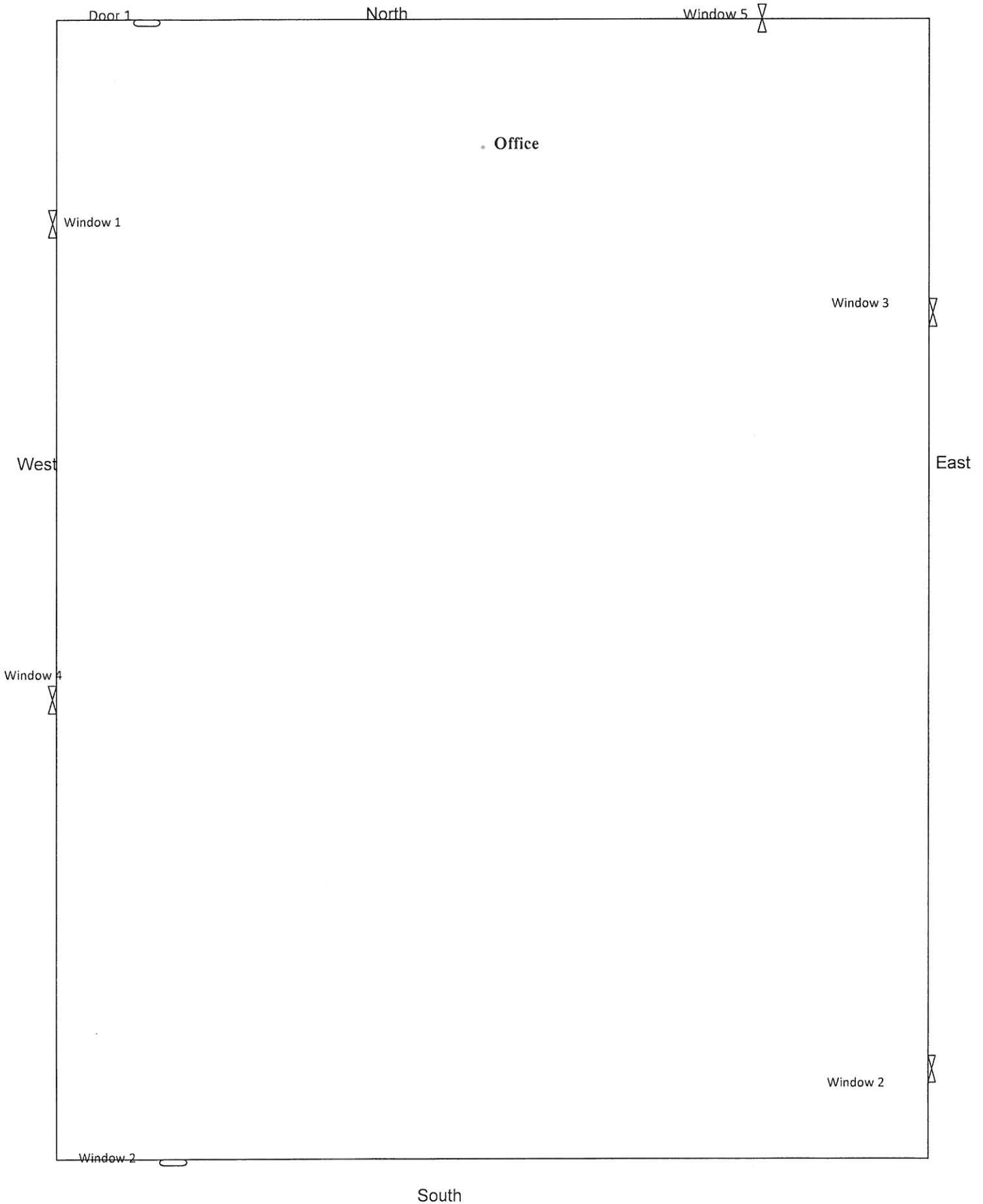
2cm = 6 meter

1.5meter = R12

- 2.1. How much does it cost the organization when the inspector travels from OF 1 to department LB (through department CM, SD, SH, TB, HB, OB and WH)?.....
- 2.2. How much is the total distance (in meters) does the inspector travels from SD to department Office (through department SH,TB, HB,OB, WH and LB).
- 2.3. From department TB: How much money will the company save if they move department LB to same location as department HB? (Through department HB,OB and WH)
- 2.4. From the LB: How much money will the company save if they move department WH to same location as department SH? (Through department OF,CM, SD,SH,TB,HB and OB).....
- 2.5. What is the total cost of the supervisor travelling from department OF up until he comes back again to department OF.....
- 2.6. If the total distance of the inspector traveling from OF to SH, is reduced to half, how much money will the organization have saved? (Through department LB, WH, OB,HB and TB).....
- 2.7. From department TB until he comes back to department TB: What is the total distance (in meters) the the inspector travels, if he has to visit all department two times.
- 2.8. From SD: which route cost less (how much) to get to department OB. (Through department (Through department SH,TB and HB) OR (Through department CM, OF, LB and WH).....
- 2.9. How much does it cost the organization for the inspector to travel department OF to department WH. (Through department CM,SD, SH,TB,HB and OB).....
- 2.10. From department HB: How much money will the company save if they move department WH to same location as department SH. (Through department TB, SH,SD,CM, OF and LB).....

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Flow diagram

QUESTION 3

Complete the time study sheets provided below.	(33)
Elapsed time	(2)
Recorded Time	(3)
Watch Error	(4)
Unoccupied Time Allowance	(6)

Note:

The observed times provided are in seconds

Allowances have been provided in the sheets.

ALL answers must be in 2 decimal places

The study began 10:00 in the morning and ended at 11:55 morning.

TEAS = 2minutes

TEBS = 1Minute 45Seconds

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OBSERVATION SHEET

DEPARTMENT;	Time Finished	TEBS	DATE (yy/mm/dd)
DIVISION;	11:55	+ TEAS	OPERATION NO;
MACHINE DESCRIPTION;	- Time Started 10:00	+Obs Time OF all elements	TAKEN BY;
WORKER; m / f	= Elapsed Time		Elapsed time:
		= RT	Recorded Time:
			Watch Error (ET-RT/ET *100)

Element Break Points;	TEBS;
	TEAS;

[illegible]

ANALYSIS SHEET

DEPARTMENT;	DATE (yy/mm/dd)
MACHINE no;	OPERATION NO;
MACHINE DESCRIPTION;	TAKEN BY;
TASK DESCRIPTION;	

		Elements											
		1	2	3	4	5	6	7	8	9	10	11	12
Cycle Number	1												
	2												
	3												
	4												
	5												
	6												
	7												
	8												
	9												
	10												
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	25												
	26												
	27												
	28												
	29												
Totals													
No of Obs													
Elem Basic Time													

SUMMARY SHEET

DEPARTMENT;	DATE (yy/mm/dd)
MACHINE DISCR;	OPERATION NO;
TASK DESCRIPTION;	TAKEN BY;
PART DESCRIPTION;	

[illegible]

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