FACULTY OF ENGINEERING AND BUILT ENVIRONMENT

2019 NOVEMBER EXAMINATION

DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT

PROGRAMME:	NATIONAL DIPLOMA
MODULE	ORGANISATIONAL EFFECTIVENESS 2B
CODE	ORE22B2/OEF22B2
DATE	26 November 2019
DURATION	3 HOURS
TIME	08H00 – 11H30
TOTAL MARKS	100

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EXAMINER	Mr. M MOLEFE
INTERNAL MODERATOR	Ms. J MHANGA
NUMBER OF PAGES	8 PAGES

INSTRUCTIONS TO CANDIDATES:

- There are two section.
- There are four question asked
- Question papers must 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.
- Round of all digits to 2 decimal spaces, unless instructed otherwise.
- The general University of Johannesburg policies, procedures and rules pertaining to written assessments apply to this assessment.

SECTION A

QUESTION 1

Define the following Terms.

1.1 Restricted work.   (2)
1.2 Unrestricted work   (2)
1.3 Operations chart   (2)
1.4 Time study   (2)

1.5. Illustrate the five {5} symbols used in the basic procedure o method study   (5)

1.6. Re-draw the diagram and fill in the missing blocks   (4)

Cycle Time

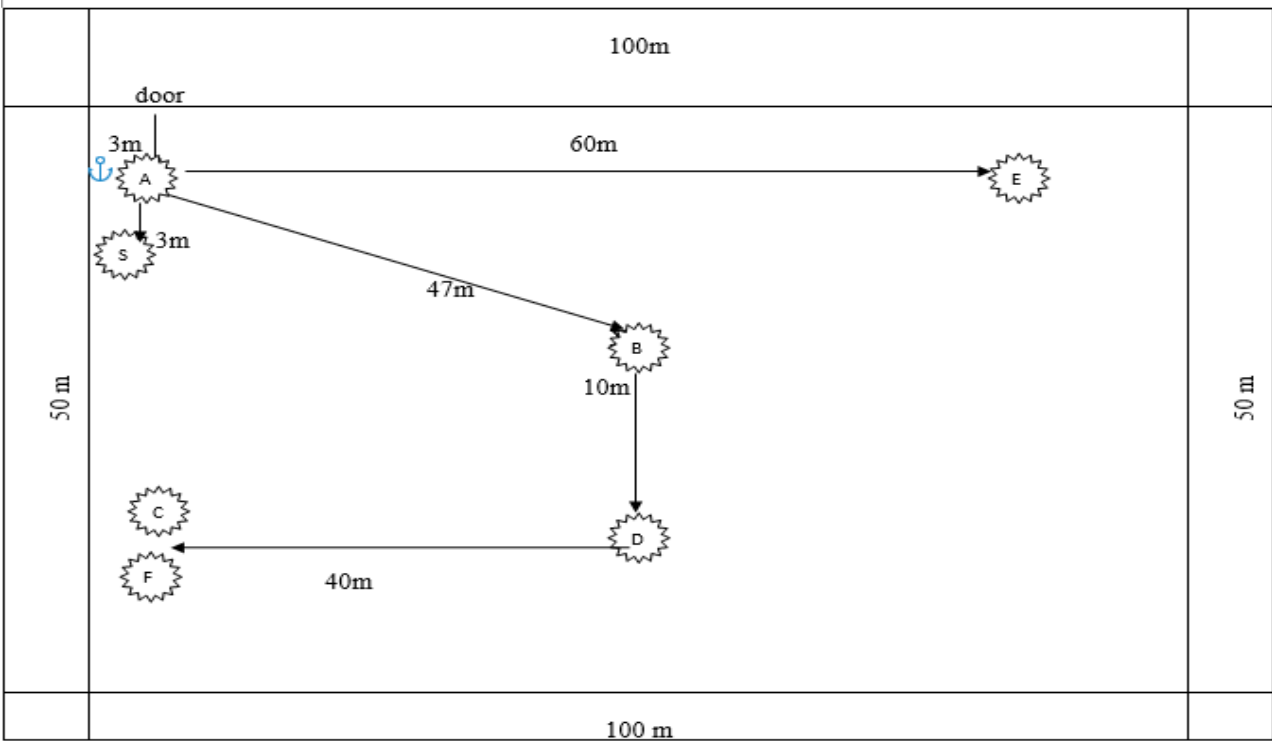|		?	
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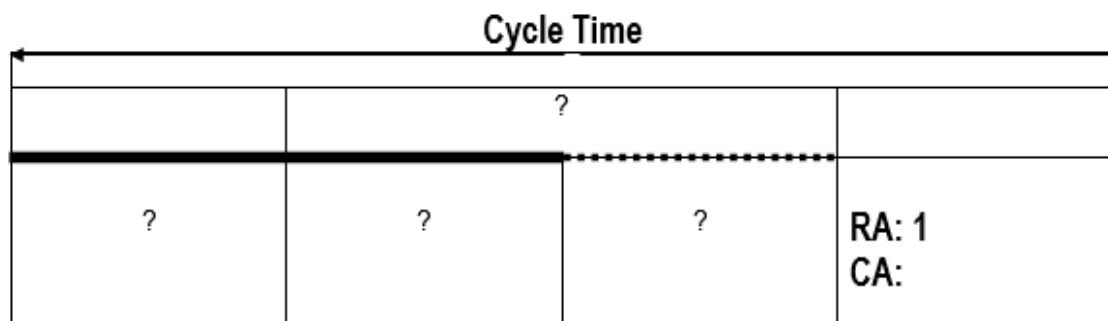
[17]

Question 2

A warehouse layout is presented below, make use of the information to answer the questions below.

NOTE: every two meters when the machine is wheeled out it cost the company R 2.50. The machine takes 30 seconds to be wheeled a distance of a single meter. The operator of the machine is paid R5 a minute

2.1.   What is the total cost of distance within the presented warehouse?   (2)

2.2.   From the door If the travelling distance from section A to section C (through section B and D) is reduced by half. How much will be saved for the company.   (2)

2.3.   If section F is moved to section D how much money will be saved   (2)

2.4.   If the process in section C is 32 min how much is the operator paid   (2)

2.5.   If the operator needs to travel from section B to E, via route BAE and when he gets to section E he performs a process that takes 32 minutes. How much will it cost the company   (2)

[10]

SECTION B: Time Study.

Question 3
(SHOW ALL WORKINGS)
A cake producing company hired a mixing machine for 7 days. each day consists of 8 working hours. During this period the machine was used 45 hours, due to shortages in resources the machine was idle for 2 hours and 15 min, the total breakdown time 23 min due to faulty parts, and not operating due to changeovers for 37 min. 80 cakes were produced. Each cake is produced at a rate for 15 minutes.

3.1 Machine maximum time	(3)
3.2 Machine running time	(2)
3.3 Machine Utilization Index.	(2)
3.4 Machine Efficiency Index.	(3)
3.5 Machine Effective Utilization Index.	(3)

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Question 4

Use the case study below to complete the time study sheets provided.

Note: The observed times provided are in seconds

ALL answers must be in 2 decimal places (except in Averages and Ratings, which must be whole number)

A metal gate is a great accessory for a yard entrance or patio with a fence. The gate will keep animals and unwanted guests out at night, without breaking up the flow of your lawn with a solid, wood door or wall. It is also easy to open and close, and metal makes it very strong. A metal gate can be built by anyone who has knowledge of metalworking and can cut and weld metal bars. A worker cutting metal for making small gates was observed. After conducting a pilot study, the following elements had been recorded:

The study was scheduled to begin at 07:50 but got delayed whereby the study ended up starting at 8:20. The study took 40 minutes and the time elapsed after study that was recorded was 200cm.

1. collect material from warehouse **(96, 95, 95, 96, 97)**
2. switch on the machine **(only happens in C1:20)**
3. Cut two lengths of 1-inch metal channel bar to the width of the gate **(55, 58, 62, 61 , 60)**
4. channel bar to the height of the gate **(324, 320, 325, 323, 321)**,
5. Clamp the two 36-inch lengths of channel bar to the ends of the bar in the vise, (**except cycle 4**) **(887, 886, 885, 886)**,

4

6. align metal in the machine   *(40, 40, 40, 40, 43),*
7. weld the corners of the hinge to the gate   *(90, 93, 89, 88, 91),*
8. Weld a gate latch to the other side of the gate *(122, 123, 125, 120, 126),*
9. take out the finished gate from the machine   *(450, 455, 449, 452, 450),*
10. after each gate, switch-off the machine   *(120, 118, 120, 125, 122)*

Allowances...

Fatigue allowances 2%, Contingences 200CM, delay 0.05 hours and Policy allowances 5000 centi-minutes, 15 min personal needs allowance, Tool maintenance 650 seconds,

Calculate the following.

4.1 Calculate sample size for element 1 and 5 (show all workings).   (10)
4.2 Time elapsed before study.   (1)
4.3 Time elapsed after study.   (1)
4.3 Elapsed time.   (2)
4.4 Recorded Time.   (2)
4.5 Watch error.   (2)
4.6 Total basic time.   (5)
4.7 Element basic time.   (10)
4.8 Element Representative Basic Time.   (10)
4.9 Total Representative basic time.   (1)
4.10 Allowances.   (6)
4.11 Machine control time   (3)
4.12 Unoccupied time allowance   (3)
4.13 Standard time   (4)
                                                                        [60]
_____ **[100]**

FIRST NAME Organizational Effectiveness 2B	S-NAME	STUDENT # CODE:ORE22B2

OBSERVATION SHEET

DEPARTMENT;	Time Finished	TEBS	DATE (yy/mm/dd)
DIVISION;		+ TEAS	OPERATION NO;
MACHINE DESCRIPTION;	- Time Started	+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;

Elem no	Rating	Obs Time	Basic Time	Total Basic Time	Elem no	Rating	Obs Time	Basic Time	Total Basic Time	Elem no	Rating	Obs Time	Basic Time	Total Basic Time
1					1					1				
2					2					2				
3					3					3				
4					4					4				
5					5					5				
6					6					6				
7					7					7				
8					8					8				
9					9					9				
10					10					10				
1					1									
2					2									
3					3									
4					4									
5					5									
6					6									
7					7									
8					8									
9					9									
10					10									

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
Cycle Number	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
	13										
	14										
	15										
	16										
	17										
	18										
	19										
	20										
Totals											
No of Obs											
Elem Basic Time											

SUMMARY SHEET

Elm no	Type of elm	Element Description	Element basic time	Volume	Frequency	Element Repres Basic Time
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
TOTAL REPRESENTATIVE BASIC TIME						
	Personal needs Allowance ( )					
	Fatigue Allowance ( )					
Rest Allowance						
BASIC WORK CONTENT						
	Work Contingency Allowance ( )					
	Tool Maintenance Allowance ( )					
Working Allowance						
TOTAL BASIC WORK CONTENT						
Delay Allowance ( )						
OCCUPIED TIME						
	MCT = (OT of IW + UT)					
	UTA = (MCT – BT of IW)					
Unoccupied Time Allowance						
STANDARD TIME						
Policy Allowance ( )						
ALLOWED TIME (SECONDS)						
ALLOWED TIME (STD. MIN)						
ALLOWED TIME (STD. HR)						