FACULTY OF ENGINEERING AND BUILT ENVIRONMENT

2020 SUMMER SUPPLEMENTARY EXAMINATION

DEPARTMENT OF QUALITY AND OPERATIONS MANAGEMENT

PROGRAMME:	ND MANAGEMENT SERVICES ND OPERATIONS MANAGEMENT
MODULE	ORGANISATIONAL EFFECTIVENESS 2A
CODE	ORE22A2
DATE	SUMMER SPECIAL EXAMINATION 2019 JANUARY 2020
DURATION	3 HOURS
TIME	
TOTAL MARKS	100

EXAMINER	Mr. M MOLEFE
INTERNAL MODERATOR	Ms. J MHLANGA
NUMBER OF PAGES	10 PAGES

INSTRUCTIONS TO CANDIDATES:

- There are two section.
- There are three 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.

QUESTION 1
1.1.   Differentiate between Macro and Micro Motion studies   **(2)**

QUESTION 2

Use the case study below to answer the questions provided:

Naso is a world known tyre manufacturing company. It has 32 plants in 31 different countries, in South Africa they have two plants one in Durban and one in Johannesburg. The output of tyres in Johannesburg has been dropping every year but the demand has been increasing, this has resulted in frustration of customers, because they cannot get their tyres on time. The company directors has decided to hire a Work Study Practitioner "Timothy" to look in to the problem and come up with solutions. To understand the source of the problems the work Study start by diagnosing at all departments. They are five departments; Primary **"PR"**, Secondary **"SC",** Local **"LO",** international **"IN",** Supply **"SU".** PR department is responsible for making sure that the material is supplied at all times, department SC is where the measurements and machine maintenance is done, department LO is processing the raw material to finished products, department IN that is where they do inspection and quality check lastly its department SU where they sort tyres by size and packaged them by size to be distributed.

From office Timothy goes to PR (located 21 7cm towards window 4), the he goes to SC (located 27 9cm towards window 3 from PR), before he goes to IN (which is located 45 15cm towards window3 from LO), he goes to LO (located 18 6cm towards window 1 from SC), from IN he goes to SU (located 57 19cm towards door 1 from IN), lastly before he goes back to his office he has to go to Storage House "**SH**" (located 33 11 cm towards window 5 from SU). Connect office and SH with 10 cm.

While he is in his office before visiting all the departments: he changes his cloths to safety gear, check if all necessary paper work is in order and walks to the department **PR**. In every department he does the following *same* activities: check the register, open a docket for the department, inspects the machines, sign off the docket and walks to another department. When he gets to storage house: he checks the humidity of the storage, sign off the docket and walk to office.

Using the case study provided to draw a flow diagram (5 marks) and answer questions

2.1 – 2.10 (20 marks)

Use the following scale to draw the flow diagram.

Scale:

3cm = 9m

R30= 2.5meter

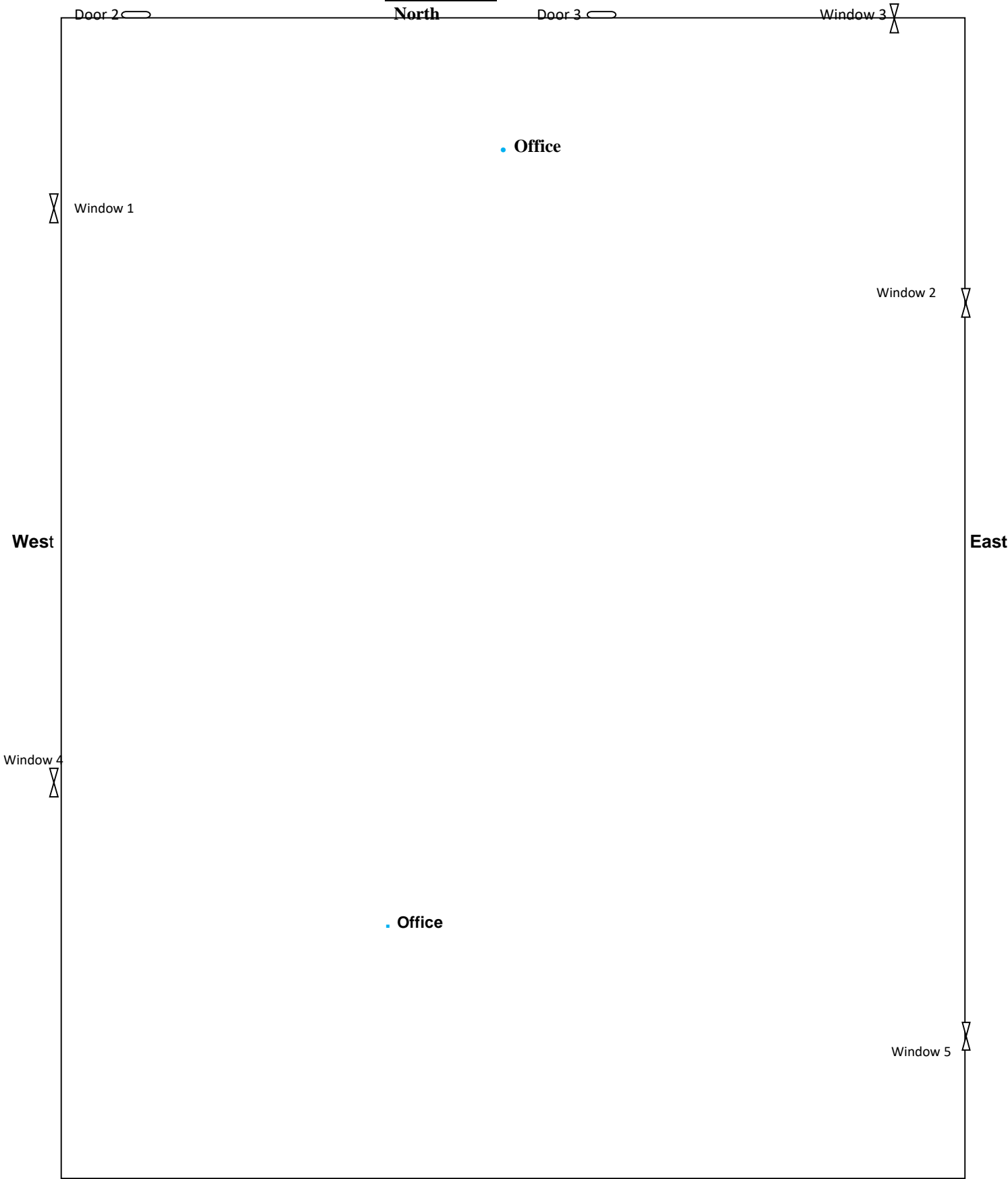**NOTE**: all answers must be written on the space provided (………) next to the question.

1cm = 3m

1m = R12

2.1.   How much does it cost the organization when Timothy travels from Office to department LO (through department PR and SC)**?**   **(2)**

2.2.   How much is the total distance (in meters) does the inspector travels from SH to Office (through department: SU, IN, LO,SC and PR).   **(2)**

2.3.   From department SC: How much money will the company save if they move department SU to same location as department LO? (Through department IN)   **(2)**

2.4.   From the PR: How much money will the company save if they move SH to same location as department SC? (Through department SU, IN and LO)   **(2)**

2.5.   What is the total cost of Timothy travelling from Office up until he comes back again Office.   **(2)**

2.6.   If the total distance of the inspector traveling from Office to PR, is reduced to half, how much money will the organization have saved? (Through department SH, SU, IN, LO and SC).   `   **(2)**

2.7.   IF Timothy would walk from department IN until he comes back to department IN three times: What will be the total distance (in meters).   **(2)**

2.8.   From Office: which route cost less to get to department IN (and how much is the cost). **(Through department PR, SC and LO**) OR (Through department SO, and SU). **(2)**

2.9.   How much does it cost the organization for Timothy to travel from department SU to department PR. (Through department IN, LO and SC).   **(2)**

2.10.   From SH: How much money will the company save if they move department SC to same location as department SU. (Through department SU, IN and LO)   **(2)**

[25]

Surname:_____ **STUDENT NO:**_____

Flow diagram

North

Door 2 ⬭   Door 3 ⬭   Window 3

. **Office**

Window 1

Window 2

West   **East**

Window 4

. **Office**

Window 5

Door 1 ⬭   **South**   €

Question 3
Use the case study provided below to:

Complete the time study forms   **(73)**

Use the case study above to complete the time study sheets provided below.
Watch Error
Unoccupied Time Allowance

NB:

The observed times provided are in seconds
Allowances have been provided below.
ALL answers must be in 2 decimal places (**except** Average and Rating)

Add the following allowances:
- Fatigue allowance 500 centi- minutes
- Personal allowance 1.4 %
- Work contingency allowance 2.1 %
- Tool maintenance allowance 3 minutes
- Policy allowance 0.2 hrs
- Delay allowance 646 centi-minutes

Irelands Mapps is a big company that specializes on making wine. This study was conducted at their headquarters where they have all the department set to work together from the time the ray material arrive until the wine is packaged. The are four main department: Molting, Testing, Fermentation and Packaging department the semi-finished grains go to different departments to make different types of wines. Fermentation is one of the important departments which the executive choose to do a time study on. The time study was conducted in the Fermentation department by observing a worker caring out his daily activities. Note that some elements were not carried out in all departments. The study started at 5:00 and ended at 21:00. Also a TEAS of 8 minutes and TEBS of 17 minutes was recorded. The following elements were observed: Wear the protective clothes (only happens in circle 1);41. Arrange the material; 63,64,60,66 , 65. Check the setups of the machine (does not happen in circle 3);11, 12, 11, 13. Switch on the machine (only happens in circle 1) 9. Load the machine; 298,306,310, 300, 307. Run the machine manually; 3356, 3355, 3361, 3362, 3360. Wait for the machine to finish off heating the grains; 6982, 6978, 6980, 6969 , 6970.

5

Wait for the machine to release the data (only happens in circle 2 and 3);98, 102. Wait for the machine to release the semi-finished product (only happens in circle 4); 900. Count damages with a machine (only happens in circle 1, circle 3 and circle 4); 86, 82,81. Switch off the machine (only happens in circle 2 and last circle); 30, 27. Park five tank with molt; 74.

[73]

[100]

	FIRST NAME	S-NAME	STUDENT #	COURSE	SIGNATURE

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

ANALYSIS SHEET

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

	Elements											
Cycle Number	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
1												
2												
3												
4												
5												
6												
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11												
12												
13												
14												
15												
16												
17												
18												
19												
20												
21												
22												
Totals												
No of Obs												
Elem Basic Time												

SUMMARY SHEET

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

Elm no	Type of elm	Element Description	Element basic time	Volume	Frequency	Element Repres Basic Time
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						
ALLOWED TIME (STD. MIN)						
ALLOWED TIME (STD. HR)						