FINAL	%	

UNISA

MNO2604

OCTOBER/NOVEMBER 2017

WORK STUDY

STUDENT NUMBER									

IDENTITY NUMBER												

FOR USE BY EXAMINATION INVIGILATOR

Question No	Marks Examiners					
	1		2		3	
Question 1						
Question 2						
Question 3						
Question 4						
Total						

Date of examination

Examination centre

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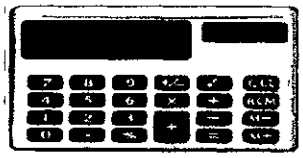

UNIVERSITEITSEKSAMENS

UNISA university of south africa

MNO2604

October/November 2017

WORK STUDY

Duration 2 Hours

70 Marks

EXAMINERS

FIRST DR B SOOKDEO
SECOND MR BL MBONYANE

Use of a non-programmable pocket calculator is permissible

Closed book examination

This examination question paper remains the property of the University of South Africa and may not be removed from the examination venue

This examination paper consists of nineteen (19) pages

Make sure the following information appears on the cover of your answer book

- your student number
- your identification number
- date of examination and examination centre

This examination paper consists of two sections
Section A consists of question 1 which contains ten multiple-choice questions Please answer this question in the block provided in your answer book

Section B consists of three questions, namely questions 2, 3 and 4 Each of these questions is worth 30 marks **You have to select any <u>two</u> questions** and answer them for 60 marks out of 70 Sections A and B together thus count 70 marks

SECTION A

QUESTION 1 ANSWER ALL THIS QUESTIONS IN THIS SECTION 10 marks

SECTION B

QUESTIONS 2, 3 and 4 SELECT **<u>ANY TWO</u>** (2) OF THE THREE (3) QUESTIONS <u>60 marks</u>

70 marks

RECOMMENDATION PLEASE CAREFULLY CONSIDER THE ABOVE MARK ALLOCATION AND TOTAL TIME LIMITATION (TWO HOURS) BEFORE DECIDING ON WHICH SECTION TO ANSWER FIRST

[TURN OVER]

SECTION A

THIS QUESTION MUST BE ANSWERED BY ALL STUDENTS ANSWER EACH OF THESE QUESTIONS IN THE BLOCK PROVIDED ANSWER ALL TEN QUESTIONS

QUESTION 1

1 1 Work study assists the management of an organisation to

1 achieve its organisational objectives efficiently
2 determine the costs of raw materials from its suppliers
3 measure the efficiency of its markets
4 report on employees who are not punctual at work

Answer

1 2 Work study succeeds because it is

1 inexpensive and easy to maintain
2 labour intensive and intensive
3 systematic and follows a set procedure
4 time consuming and thorough

Answer

1 3 Method study is the first technique of Work study and is followed by work measurement Method study concentrates on

1 Measuring the time that it takes to carry out a task
2 Using direct and indirect work measurement techniques in order to improve work
3 Developing more efficient methods of working
4 Improving the efficiency of an organization by setting achievable time standards

Answer:

1 4 Process charts fall into two distinct categories Charts which are used to record a "process sequence" and charts which are used to "record actions" Which one of the following process charts indicate a "record actions"?

1 Outline process chart
2 Multiple activity chart
1 Simo chart
4 Flow process chart

Answer

1 5 The critical examination of all the recorded information refers to which one of the following steps of the work study procedure?

1 Step 1
2 Step 2
3 Step 3
4 Step 4

Answer:

1 6 In terms of work measurement, a qualified worker can be defined as someone who has the necessary

1 training and skills to carry out a specific task
2 tertiary qualifications to carry out a specific task
3 ability to command people to achieve a specific task
4 supervision capabilities to achieve a specific task

Answer

1 7 Which of the following can be considered a direct work measurement technique?

1 Synthesis
2 Time study
3 Analytical estimating
4 Predetermined motion time systems (PMTS)

Answer

1 8 State which of the following represents the fourth step of the work measurement procedure

1 Measure
2 Define
3 Compile
4 Select

Answer

1 9 Given the following information, calculate the "Actual time" and state which one of the following is the correct answer

Observed time	Rating	Basic time	Frequency	Selected basic time	Rest allowance	Actual time
1 55	85		1/1		12	

1 1 475 standard minutes
2 1 476 standard minutes
3 1 477 standard minutes
4 1 478 standard minutes

Answer

1 10 The observed time of Element A is 11 75 minutes and it has a rating of 70% Calculate the "Basic Time" and state which one of the following is the correct answer

1 8 221 standard minutes
2 8 223 standard minutes
3 8 224 standard minutes
4 8 225 standard minutes

Answer

Section A 10 questions x 1 mark = 10 marks

SECTION B

QUESTIONS 2, 3 AND 4
SELECT AND ANSWER ANY TWO (2) OF THE THREE (3) QUESTIONS BELOW
EACH QUESTION COUNTS 30 MARKS

QUESTION 2

2 1 Explain the definition of the term "work study" and outline the steps of the work study procedure (10)

2 2 Apart from work study training, work study officers must possess certain characteristics in order to conduct work study investigations Name these characteristics (7)

2 3 There is a set procedure that must be followed during a method study investigation Explain the necessity for this and outline the procedure of method study (8)

2 4 Work measurement is the second technique of work study and must be conducted after method study Write short notes on your understanding of the term work measurement (5)

[30]

QUESTION 3

3 1 **Method study.** Flow process chart

The following process concerns the packaging of canned vegetables at Fresh Food (Pty) Limited The process starts with the operator fetching empty cans from storage The process ends with the operator positioning the packed box of cans onto a pallet to be transported to the warehouse Compile a flow process chart of the following procedure (15)

Job. Packing canned foods

Chart begins The operator fetching empty cans from storage

Chart ends The operator positions the sealed box onto a pallet

The operator fetches cans from storage He then opens a carton of cans and then inspects the quality of cans He then picks up and positions cans into the machine He switches on the machine The cans travel on the conveyer belt to point one (1) Here, the can is filled with vegetables The can then travels to point (2) The inspector checks if the cans are filled The can then travels to point (3) A lid is fitted onto the can The can then travels to point (4) The can is sealed The can then travels to point (5)

Here, a label is attached to the can The can then travels to the end point The inspector checks the quality of cans The operator then packs the cans into the box The operator then seals the box He places the sealed box onto a pallet

[TURN OVER]

FLOW PROCESS CHART

		SUMMARY			
LOCATION		**EVENT**	**PRESENT**	**PROPOSED**	**SAVINGS**
ACTIVITY		OPERATION			
DATE		TRANSPORT			
OPERATOR	ANALYST	DELAY			
CIRCLE APPROPRIATE METHOD AND TYPE METHOD PRESENT PROPOSED		STORAGE			
TYPE WORKER **MATERIAL** MACHINE		INSPECTION			
REMARKS		TIME (minutes)			
		DISTANCE/ AFSTAND (metres/meter)			

STEP	**DESCRIPTION**	**SYMBOL**	**TIME (in mintes)**	**DISTANCE (in metres)**	**REMARKS**
		○ □ D ⇨ ▽			
		○ □ D ⇨ ▽			
		○ □ D ⇨ ▽			
		○ □ D ⇨ ▽			
		○ □ D ⇨ ▽			
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		○ □ D ⇨ ▽			

3 2 **Method study**· Outline Process Chart

Use the information from the case study provided in question 3 1 and compile an outline process chart of the following procedure (15)

Job Packing canned foods
Chart begins The operator fetching empty cans from storage
Chart ends The operator positions the sealed box onto a pallet

OUTLINE PROCESS CHART

DEPARTMENT				STUDY NO	DATE
DIVISION				TAKEN BY	
SHEET OF				CHART COMMENCES AT	
PRESENT METHOD		PROPOSED METHOD		CHART ENDS AT	
DESCRIPTION OF TASK					

WORKER MATERIAL EQUIPMENT

STEP	DESCRIPTION/BESKRYWING	SYMBOL	TIME	REMARKS/

SUMMARY	○ OPERATION	□ INSPECTION		TOTAL STEPS
	NO TIME	NO TIME		

[30]

QUESTION 4

4 1 A work study officer must sometimes use the statistical formula to determine the scope of a work measurement study Make use of statistical formula to determine whether enough observations have been made The task consists of five (5) cycles The job was measured and the basic times of the variable elements with the greatest degree of variance were 2, 3, 4, 5 and 6

Show all steps of the calculations (5)

4 2 **Work measurement** Time study
The following concerns a time study that was conducted at your work place You are required to calculate the basic time, the selected basic time, the actual time and the standard time for this job A contingency allowance of 5% is applicable Please place your answers in the table below (15)

Element number	Observed time	Rating	Basic time	Frequency	Selected basic time	Rest allowance %	Actual time per element
1	2 86	60		1/1		12	
2	0 98	85		1/1		10	
3	2 94	60		1/1		12	
4	1 03	80		1/1		11	
5	2 80	60		1/1		12	
6	2 94	60		1/1		12	
7	0 81	95		1/1		10	
8	1 06	80		1/1		11	
9	1 35	70		1/1		10	
10	1 49	65		1/1		10	
						Total actual time:	
						Contingency allowance 5%	
						Standard time.	

[30]

4 3 The following observed times were taken from a time study that was conducted on a task in the production department of your organisation The job consists of five elements and four observations of each element were made The study started at 10 00 and finished at 10 25

TEAS = 4 99 minutes and TEBS = 2 18 minutes (15)

Element number	Rating	Observed time
1	80	0 81
2	90	0 85
3	95	0 87
4	85	0 86
5	90	0 83
1	70	0 79
2	75	0 88
3	80	0 81
4	75	0 85
5	80	0 87
1	75	0 90
2	70	0 99
3	80	0 96
4	75	0 95
5	70	0 97
1	80	0 87
2	85	0 85
3	95	0 91
4	90	0 88
5	100	0 83

The following rest allowances are applicable

Element 1	15%
Element 2	15%
Element 3	16%
Element 4	14%
Element 5	15%

Calculate the following

4 3 1 The error margin {2}

4 3 2 The average basic time per element {5}

ANNEXURE B

TIME STUDY ANALYSIS SHEET

DEPARTMENT		STUDY TAKEN BY	
DIVISION		DATE	STUDY NO
DESCRIPTION OF TASK		TIME FINISHED	TEBS + TEAS
		TIME STARTED	TIME OF STUDY
WORKER	ERROR	ELAPSED TIME	RECORDED TIME

Basic time per element

		ELEMENT NUMBER									
		NO 1	NO 2	NO 3	NO 4	NO 5	NO 6	NO 7	NO 8	NO 9	NO 10
NUMBER OF OBSERVATIONS	1										
	2										
	3										
	4										
	5										
	6										
	7										
	8										
	9										
	10										
	11										
	12										
	13										
	14										
	15										
TOTALS											
NO OF OBSERVATIONS											
AVERAGE BASIC TIME											

TEBS = TIME ELAPSED BEFORE STUDY TEAS = TIME ELAPSED AFTER STUDY
SBT = SELECTED BASIC TIME AT = ACTUAL TIME

4 3 3 The standard time to produce a product {7}

STANDARD TIME CALCULATION							
Elem No	Element Description	Basic Time	Frequency	SBT	RA %	Other Allow	Actual Time

S B T – Selected Basic Time	**TOTAL ACTUAL TIME**	
R A - Rest Allowances	Contingency allowance 5%	
AT – Actual Time	**STANDARD TIME:**	

[30]

Section B any 2 questions x 30 marks = 60 marks

TOTAL NUMBER OF MARKS (SECTIONS A & B) = 70

ADDITIONAL PAGES
Should you find that the space provided after each question is insufficient, please number the question and continue with your answers on the following pages

Tear

attendance register (university copy) UNISA

Fill-in/MCQ

Examination period

Student number

Surname

First Names

Subject

Code of paper — Number of paper

Centre Date

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That the information supplied by me in this answer book is correct and valid

I undertake to adhere to the procedures rules and regulations of the University of South Africa as published in the official brochures

Signature of candidate

ID Number

Batch No
28092015MCQ

Signature of invigilator

UNISA invigilator's personnel number

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