NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

LSV – Fundamental Surveying Computations

T112

Friday, 30/7/2021

08:30 – 11:30 AM

Names: .....

Index number: .....

TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

QUESTIONS and ANSWERS BOOKLET

OPTION/TRADE: **LAND SURVEYING**

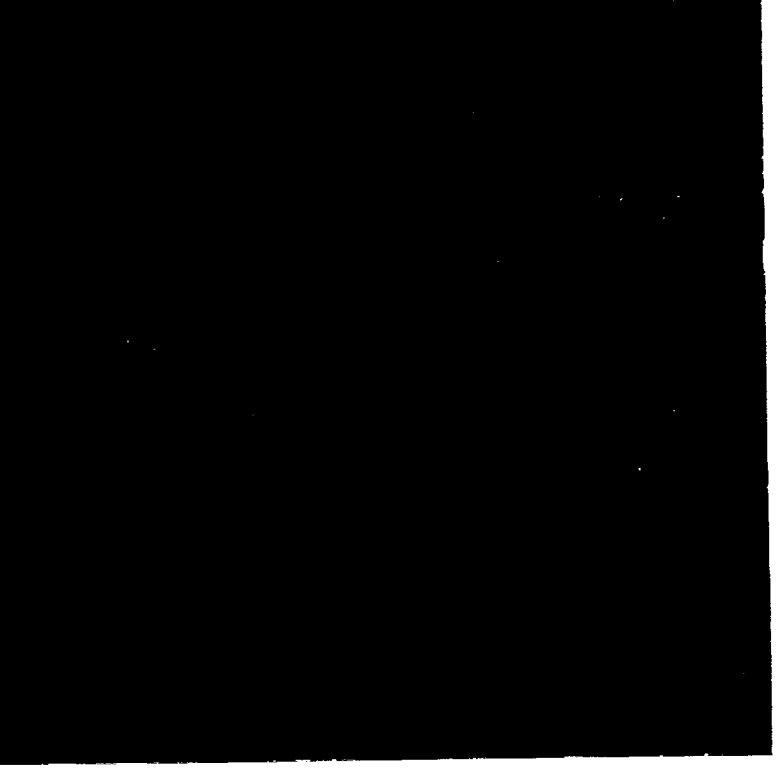
SUBJECT: **Fundamental Surveying Computations**

ACADEMIC YEAR: **2020-2021**

Read carefully the instructions on page (i) & (ii).

FOR EXAMINER'S USE ONLY

QUESTIONS	1	2	3	4	5	6	7	8	9	10	Total
Marks											
QUESTIONS	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**Total**
Marks											
QUESTIONS	**21**	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**	**Total**
Marks											



TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

INSTRUCTIONS TO CANDIDATES: PART I (Answer Booklet)

1. A candidate should fill in the actual names and the index number on the cover of this questions and answer booklet on the provided place (Black Box).

2. It is illegal for a candidate to write any of his/her names, index number or a school name inside the answer booklet.

3. A candidate should check if all pages of the answer booklet are complete. No candidate should remove or tear any pages or part of it from the answer booklet.

4. A candidate should answer in the language in which the examination is set. (See page ***(ii)***)

5. A candidate should sign on the sitting plan when submitting the answer booklet. He/she has also to check if the answer booklet is well sealed.

6. No extra paper is allowed in the examinations room. If a candidate is caught with it his/her results will be nullified.

7. No candidate is allowed to write answers not related to the subject being sat for, otherwise it will be considered as a cheating case.

8. Write your answers on the 12 lined pages (From page 1 of 12 to page 12 of 12).

9. Use the last non-lined pages as draft.

10. Results for any candidate who is caught in examination malpractices are nullified. The cheating can be recognized during examinations administration, marking exercise or even thereafter.

TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

OPTION/TRADE: LAND SURVEYING

SUBJECT: Fundamental Surveying Computations

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES: PART II (Question Paper)

The paper is composed of two (2) Sections as follows:

Section I: Attempt all the Twelve (12) questions
(60 marks)
Section II: Attempt any Four (4) questions out of Six (6)
(40 marks)

Allowed materials:

- Ruler or square
- Calculator

Note:

Every candidate is required to carefully comply with the provided assessment instructions.

Section I : Attempt all the Twelve (12) questions (60 marks)

(01) State any five (5) obstacles which occur in chaining survey.

(5 marks)

(02) A plot of the land has the following coordinates: A(10,40);B(70,10);C(60,30) and D(30,70) in meters. Calculate the area of that plot.

(5 marks)

(03) Convert the following angles in centesimal system:

a) $30^{0}20'$

b) $150^{0}20'17"$ **(5 marks)**

(04) Differentiate Surveying from plane survey as terms used in data collection.

(5 marks)

(05) Describe the term precision; how does this term differ from accuracy?

(5 marks)

(06) From a topographic map, the areas of enclosed by contour lines for a proposed dam are given below. Find the volume of impounded water using trapezoidal formula:

Contours(m)	Area enclosed(hectares)
500	20
505	100
510	400
515	900
520	1100

(5 marks)

(07) Identify five (5) kinds of tape correction during survey measurement. **(5 marks)**

(08) The angles are data collected from the field through different conditions. As data Collector, name two (2) factors that the accuracy of angular measurements in traversing depends on. **(5 marks)**

(09) A two points on terrain whose slope distance is 40m are 10m apart vertically, with help of sketch, determine the horizontal distance between them. **(5 marks)**

(10) In the project of maintaining the road (NR1) the surveyors measured the linear distance of the road using odometer (having a diameter of 20 m). What is the measured distance if they found 5000revolutions? **(5 marks)**

(11) During surveying by using tape measure, rear survey is very important in taking the accurately measurements. As professional surveyor, summarize at least five main steps to be used in that case. **(5 marks)**

(12) Explain why linear measurements are needed in construction. **(5 marks)**

Section II: Attempt any Four (4) questions out of Six (6)

(40 marks)

(13) Ennumerate five (5) sources of errors during levelling in measurement of the following types of errors:

a) Instrument

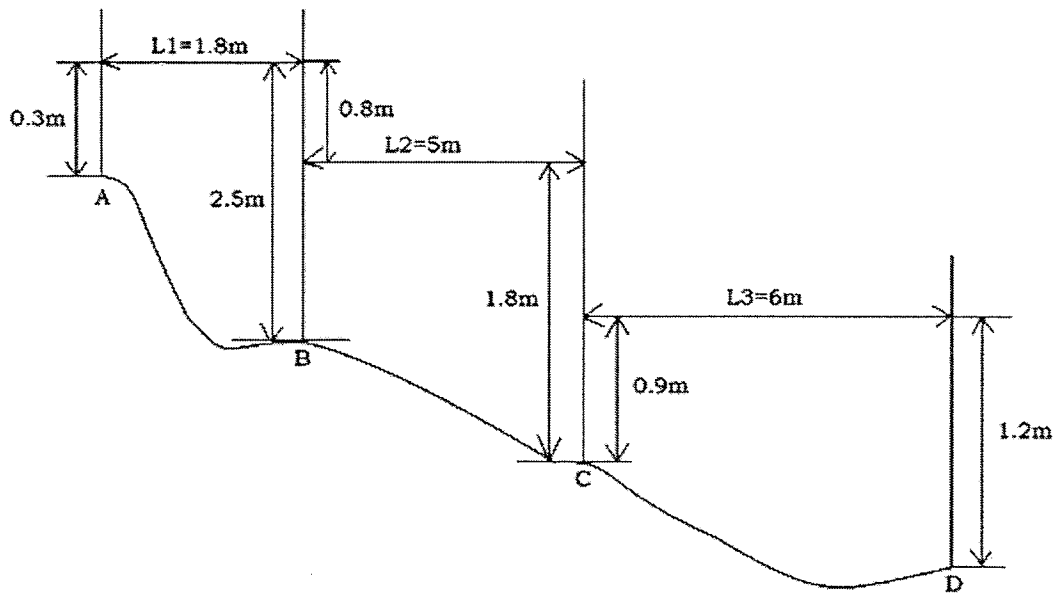
b) Natural **(10 marks)**

(14) By using shape, describe any four (4) types of Measured Angles used in surveying computations. **(10 marks)**

(15) A distance of 2000m was measured by 30m chain. Later, it was detected that the chain was 0.1m too long. Another 500m was measured and it was detected that the chain was 0.15m too long. If the chain was initially corrected, determine the exact length that was measured.

(10 marks)

(16) In the figure below, the distances have been measured using tape measure.



Determine:

a) The horizontal distance AD

b) The difference in height between point A and D

c) The ground distance AD and the slope along AD.

(10 marks)

(17) Enumerate any ten (10) characteristics of contour lines in surveying computation. **(10 marks)**

(18) Compare rise and fall method versus collimation method.

(10 marks)