

**THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
FORM TWO NATIONAL ASSESSMENT
CIVIL ENGINEERING SURVEYING**

073

Time: 2:30 Hours

Year: 2023

Instructions

1. This paper consists of sections **A, B** and **C** with a total of **ten (10)** questions.
2. Answer **all** questions.
3. Section **A** and **C** carry **fifteen (15)** marks each section **B** carries **seventy (70)** marks.
4. Cellular phones and any unauthorized materials are **not** allowed in the assessment room.
5. Write your **Assessment Number** at the top right hand corner of every page.

FOR ASSESSOR'S USE ONLY		
QUESTION NUMBER	SCORE	ASSESSOR'S INITIALS
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTAL		
CHECKER'S INITIALS		



SECTION A (15 MARKS)

Answer **all** questions in this section

1. Choose the correct answer from the given alternatives and write its letter in the box provided.

(i) The school area was surveyed before the reconnaissance exercise is conducted. Select the type of sketch which is prepared during reconnaissance survey.

- A. Reference sketch
- B. Offset sketch
- C. Index sketch
- D. Survey sketch

(ii) The reading of $315^{\circ}45'$ was recorded in the whole circle bearing when the compass surveying was conducted. Convert

- A. $N135^{\circ} 45' W$
- B. $N 44^{\circ} 15' W$
- C. $S 244^{\circ} 15' E$
- D. $N 135^{\circ} 45' E$

(iii) When carrying out leveling operations, a reference point is chosen so that the elevation of all points is related. Which of the following do surveyors use to denote reference point in the field?

- A. Level line
- B. Horizontal line
- C. Datum
- D. Reducing level

(iv) A supervisor warns you to handle with care tools, equipments and materials used in surveying works. In what category of safety does this regulation belong?

- A. Personal safety
- B. Student safety
- C. Workshop safety
- D. Site safety

(v) A surveyor went to visit the site for preliminary inspection of the area to be surveyed for constructions works. Which item is the most important to use during setting out works?

- A. Theodolite
- B. Dump level
- C. Compass
- D. Note book

(vi) A surveyor stationed at point B observed the bearing of line BC from point B towards point C . what bearing is the surveyor intend to measure?

- A. Fore bearing
- B. Back bearing
- C. BC bearing
- D. CB bearing

(vii) The distance measured on the ground with the help of a chain, tape or any other instrument , is known as

- A. Direct measurements.
- B. Indirect measurements.
- C. Computative measurements.
- D. Instrumental measurements.

(viii) Students were measuring perpendicular offsets by setting right angled triangle. Identify the right mathematical expressions used for that particular work.

A. 1:2:5

C. 3:4:5

B. 1:4:5

D. 3:4:8

(ix) A surveyor used large scale to draw the map of 1cm=1m. Convert the value into RF scale.

A. $\frac{1}{10}$

C. $\frac{1}{1,000}$

B. $\frac{1}{100}$

D. $\frac{1}{10,000}$

(x) A surveyor wishes to determine the relative position of different objects on the surface of the earth . whic principles are to be used by a surveyor to perform his work?

A. Working from the whole to the part and locate a new station by at least two measurements from fixed reference points.

B. Locating a new station by at least two measurements from the fixed reference points and bench mark.

C. Working from whole to the part and determine the natural features of a country.

D. Working from whole to the part and locate a new station by one measurement.

2. Match the items (i-v) in **List A** with the corresponding correct response in **List B** by writing a letter of the correct response in the table provided.

LIST A	LIST B
(i) Rapid sweep with right hand	A. Plum the rod to the right
(ii) Slow sweep with left hand	B. Continue to move to the right.
(iii) Right arm up and move to right	C. Continue to move to left.
(iv) Left arm extended	D. Fix the rod
(v) Both hands above head then move below down.	E. Move slowly to left
	F. Move slowly to the right
	G. Correct position.

List A	(i)	(ii)	(iii)	(iv)	(v)
List B					

SECTION B (70 MARKS)

Answer **all** questions from this section

3. Suppose you are among the students who are assigned to survey an area for the constructions of a school library. what will be your three basic duties as a surveyor?

(a)

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(b)

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(c)

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4. (a) One of the temporary adjustments to the prismatic compass in the field is centering. Explain two ways that you can use to check whether the prismatic compass is exactly centered

(i)

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(ii)

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(b) A linen tape is not always used in conducting chain surveying. Support this statement by giving three reasons.

- (i)
- (ii)
- (iii)

5. Describe five common procedures to be taken when measuring the length of a line from point A to B by using a tape.

- (i)
- (ii)
- (iii)
- (iv)
- (v)

6. (a) The surveyor is conducting a linear measurement on the sloping area. The length of the slope AB is 40.50 m and the angle measured is 30° .Calculate the true length of line AC.

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(b) Before linear measurements are taken on the ground the chainman is supposed to be at the forward end of the chain. What are the three duties of a chainman on that context?

- (i)
- (ii)
- (iii)

(c) During linear measurements, a follower should be at the rear end of the chain and holds zero end of the chain at the station Why the follower should stay on that position?

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7. Suppose you have been awarded a project to establish the elevations of all the buildings in Masoko town. Prepare a check list of pieces of equipment you will use to conduct this project basing on the following guidelines:

(a) Four equipment for measuring elevations

- (i)
- (ii)
- (iii)
- (iv)

(b) Four self-leading staves for vertical measurement

- (i)
- (ii)
- (iii)
- (iv)

(c) Six tools for linear measurements.

- (i)
- (ii)
- (iii)
- (iv)
- (v)
- (vi)

(d) Two equipment for measuring angles.

- (i)
- (ii)

(e) Two equipment for measuring bearings.

(i)

(ii)

(f) One equipment for measuring area.

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8. Prepare five equipment you would need for conducting chain surveying at a sisal farm and identify their uses"

(i)

(ii)

(iii)

(iv)

(v)

9. Readings recording during chain surveying suffers from series of different errors which can be either positive or negative. In each case, what are the five causes of errors that can be corrected before using the data?

(a) Positive errors.

(i)

(ii)

(iii)

(iv)

(v)

(b) Negative errors.

- (i)
- (ii)
- (iii)
- (iv)
- (v)

SECTION C (15 MARKS)

Answer **all** questions from this section

10.(a) Reconnaissance survey is done based on the thinking about the possible arrangement of the framework of survey and hence index sketch is prepared. Describe three common survey stations obtained in the prepared index sketch.

- (i)
- (ii)
- (iii)

(b) In chain surveying when the area is large, too much rising and falling and crowded with many details, triangulation is not possible. Account for three obstacles and how can each one be solved for the process to become possible.

- (i)
- (ii)
- (iii)