NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

LSV – Performing Setting out of Structures

T109

Monday, 26/7/2021

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: **Performing Setting out of Structures**

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: Performing Setting out of Structures

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.

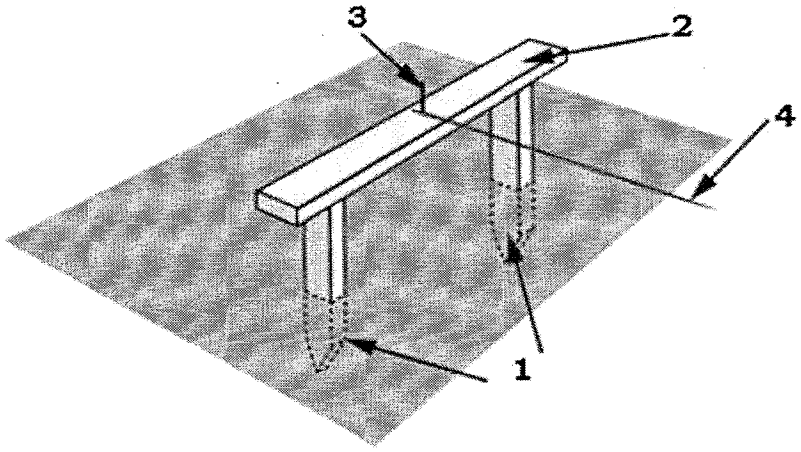
Section I : Attempt all the Twelve (12) questions (60 marks)

01. Match the terms with their meanings in the table below: **5 marks**

Column A (Items)	Column B (Meanings)	
(a) Spillway **(b)** Free board **(c)** Toe **(d)** Upstream **(e)** Transmission tower **(f)** Dam **(g)** As-built **(h)** Electrical cable	**i.**	is the arrangement made (kind of passage) near the top of dam for the passage of surplus/ excessive water from the reservoir.
	ii.	means the portion of dam in contact with ground or river-bed at downstream side.
	iii.	is the direction towards the stream (river) source, or where the stream (river) is coming from.
	iv.	is a structure set up for the purpose of transmitting and receiving power, radio, telecommunication, electrical, television and other electromagnetic signals.

02. **(a)** How can you explain the term "profile boards" as used in building setting out? **1 mark**

(b) Write the parts of a profile board as indicated in the figure below:



4 marks

03. There are different types of errors that might be made when a structure is set out. For example "gross errors", "systematic errors" and "random errors". These errors should be prevented and there are some measures to tackle these issues.

How can you prevent errors during setting out of building? **5 marks**

04. Identify any three (3) methods of setting out a right angle building.
5 marks

05. Respond by True **(T)** or False **(F)** the statement below:

Brick masonry foundation; Stone masonry foundation; Concrete foundation; Steel foundation; and Composite foundation are the types of foundation, basing on construction materials used. **5 marks**

06. List down five (5) purposes (objectives) of water storage in constructing a dam. **5 marks**

07. A surveyor technician has given a task to control the verticality of building walls. Using a sketch, explain how he/she was controlling the verticality of building walls using a plumb bob method.
5 marks

08. Differentiate building setting out from structure. **5 marks**

09. Write down the short notes on the following terms:

(a) Datum peg
(b) Bell hole
(c) Charge **5 marks**

10. Read attentively the following statements and complete them with the correct term selected among the following: "spillway"; "footing"; "settlement"; "Sub-soil"; "Crest";"berm";and "transformer":

(a) .....the soil on which the foundation is constructed.
(b) A level space, shelf, or raised barrier (usually made of compacted soil) separating two (2) areas is known as .....
(c) ..... is a part on top of the Dam that may in some cases be used for providing a roadway or walkway over the dam.
(d) The lowermost part of the foundation contact with the sub-soil is .....
(e) A ..... is an electrical apparatus designed to convert alternating current from one voltage to another. It can be designed to "step up" or "step down" voltages and works on the magnetic induction principle. **5 marks**

11. A Land Surveyor has given a job to set out a building reserved for new modern office of Bugesera District. Give the importance of surveying for setting out. **5 marks**

12. Enumerate any four (4) surveying instruments, tools and materials used in building setting out. **5 marks**

Section II: Attempt any Four (4) questions out of Six (6) (40 marks)

13. With the help of sketch, show the following parts of dam: Heel; Toe; Gallery; Sluice way; free board; Upstream; Crest, Spilliway; and Downstream. **10 marks**

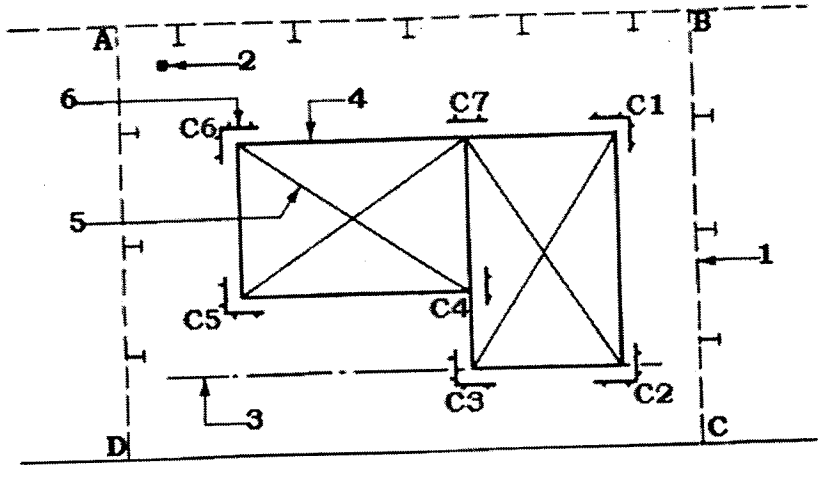
14. **(a)** A surveyor is given a job of determining the elevations of four (4) room corners from the Mean Sea Level (MSL) up to ceiling. He/she will use a ..... **(level instrument and Normal staff reading; level instrument and inverted staff reading).** **4 marks**

(b) An intern/student was given a field practical work to find the elevation of slab under side. The Benchmark height is 100m; the reading on staff at Benchmark is 2.240m and that on slab under side is -4.270m. How to find that elevation? **6 marks**

15. A rectangular parcel ABCD has 110 m perimeter and 25 m width to be built a residential house as it is represented in the figure below:

(a) Estimate the area of that parcel. **4 marks**

(b) Complete the following parts names to the indicated numbers in figure below: Site datum post (Temporary benchmark); Main setting out lines; Site boundary; Baseline; Diagonal checks; and Profiles boards.



6 marks

16. A building is a structure made with different elements, List any ten (10) elements/ components of buildings. **10 marks**

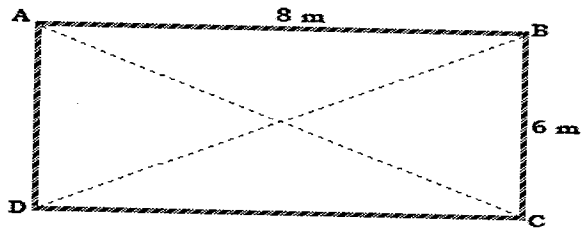
17. The following table indicates the coordinates of building set out in parcel ABCD:

CORNER	EASTING (X) (m)	NORTHING (Y) (m)
C1	504190	4779559
C2	504180	4779559
C3	504180	4779554
C4	504182	4779554
C5	504182	4779560
C6	504190	4779560
C7	504190	4779554

(a) Calculate the building dimensions from layout plan to be transferred to the ground.

(b) Check if there are errors during the setting out. **10 marks**

18. Checking the building length sides and diagonals; Measuring 8m from building corner **C** to **D;** Marking the peg on building corner **C;** Measuring **90^0** and sighting **4th** building corner **C;** Measuring **6m** from building corner **B** to **C;** Removing parallax when theodolite is set up on corner **B;** Theodolite leveling up over a building corner **B;** Centering instrument over a building corner **B;** Tripod setting up on the **2nd** building corner **B;** Marking the peg on building corner **D;** Measuring **90^0** and sighting **3rd** building corner **D;** Measuring **6m** from building corner **A** to **D;** Sighting the **2nd** building corner **B;** Removing parallax when theodolite is set up on corner **A;** Theodolite leveling up over a building corner **A;** Centering instrument over a building corner **A;** Mounting instrument on tripod; Removing instrument in box; Tripod setting up on the **1st** building corner **A;** Marking pegs on a building base line **AB;** and Measuring **8m** for building base line **AB;** are the steps followed to set out a building represented in the figure below when a theodolite instrument; tools and materials have been used. Arrange correctly from the starting to the last the above disorder steps.



10 marks