NESA NATIONAL EXAMINATION AND SCHOOL INSPECTION AUTHORITY

FOR – Basic properties of wood Assessment

T022

Thursday, 29/7/2021

08:30 – 11:30 AM

Names: .....

Index number: .....

TVET NATIONAL EXAMINATION, RTQF LEVEL 5, 2020-2021

QUESTIONS and ANSWERS BOOKLET

OPTION/TRADE: **FORESTRY**

SUBJECT: **Basic properties of wood Assessment**

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: FORESTRY

SUBJECT: Basic properties of wood Assessment

DURATION: 3 hours

INSTRUCTIONS TO CANDIDATES: PART II (Question Paper)

The paper is composed of two (2) main 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 and 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. How can you determine the wood warping? **(5 marks)**

02. Pinpoint at least five (5) points for comparing hard wood to soft wood. **(5 marks)**

03. Describe the meaning of thermal expansion of wood. **(5 marks)**

04. **a)** Write short notes on elastic properties of wood.

b) Explain the following terms:

i. Forwarding

ii. URS unloading. **(5 marks)**

05. Outline the advantages and disadvantages for mechanical unloading. **(5 marks)**

06. **a)** Differentiate mechanical to the physical properties of wood

b) List at least three (3) examples for physical and mechanical properties. **(5 marks)**

07. Differentiate wood chemical properties from wood physical properties. **(5 marks)**

08. Differentiate cellulose from hemicelluloses. **(5 marks)**

09. What are the basic characteristics of wood or tree? **(5 marks)**

10. Storage conditions should ensure that the wood sample is not altered, in any way that might affect the parameters to be analyzed: What are the key factors to consider when storing wood sample? **(5 marks)**

11. After conducting the laboratory test of wood, we interpret the laboratory data; some of these data obtained include wood structures and wood textures:

a) What is wood texture? **(2 marks)**

b) Outline Different types of wood texture. **(3 marks)**

12. a) A piece of wood contains 15% moisture. What should have been its weight before oven dry if it has a constant weight of 150 grams after drying? **(2 marks)**

b) A piece of wood containing moisture weights 205g, and after oven drying to a constant weight, it weights 110g. What is the percent moisture content? **(3 marks)**

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

13. Before utilization of wood in different engineering domains it is very important to conduct the physical and mechanical properties of that wood. How can you conduct the following test:

a) Wood decay resistance

b) Wood swelling. **(10 marks)**

14. **a)** List and explain the types of wood texture.

b) How can you test the wood cleavage?

c) Try to compare the early wood and late wood. **(10 marks)**

15. Differentiate sap wood from heart wood. **(10 marks)**

16. **a)** Identify any five (5) safety rules to respect in wood laboratory

b) Elucidate the process of heart wood formation **(10 marks)**

17. **a)** What is the density of a piece of wood that has a mass of 25.0 grams and a volume of 29.4 cm^3?

b) A piece of wood that measures 3.0 cm by 6.0 cm by 4.0 cm has a mass of 80.0 grams.

i. What is the density of that wood?

ii. If the density of wood is equal to $5g/cm^3$, would the piece of wood float or sink in water? **(10 marks)**

18. A sample of wet Douglas-fir wood 30 mm thick, 40 mm wide and 15 cm long weighs 90 g. It is then dried at 105°Celcius to constant weight and re-weighed after cooling in desiccators. The oven-dry weight is 44.37g. Determine:

a) The moisture content of wood in wet weight basis or green weight of wood sample (MC_{GR})

b) The moisture content of wood in oven dry weight basis of wood sample (MC_{QD})

c) Basic specific gravity of the wood sample. **(10 marks)**