NAMIBIA UNIVERSITY
OF SCIENCE AND TECHNOLOGY

FACULTY OF COMMERCE, HUMAN SCIENCE AND EDUCATION

DEPARTMENT OF TECHNICAL, VOCATIONAL EDUCATION AND TRAINING

QUALIFICATION: NUST BRIDGING PROGRAMME (TVET AGRICULTURE STREAM)	
QUALIFICATION CODE: 04NBTA	**LEVEL: 4**
COURSE CODE: FOF412S	**COURSE NAME: FUNDAMENTALS OF FARM MECHANIZATION**
SESSION: JANUARY 2025	**PAPER: 2**
DURATION: 3 HOURS	**MARKS: 100**

SECOND OPPORTUNITY EXAMINATION QUESTION PAPER	
EXAMINER(S)	Mr Jaandjua Meno Kaputu
MODERATOR:	Mr Mungalisa Ocacious Mungalisa

INSTRUCTIONS
1. ANSWER ALL THE QUESTIONS. 2. READ ALL THE QUESTIONS CAREFULLY BEFORE ANSWERING. 3. NUMBER THE ANSWERS CLEARLY

THIS QUESTION PAPER CONSISTS OF _5_ PAGES (INCLUDING THIS FRONT PAGE)

Section A: Multiple Choice Questions [20 marks]

1. What is Calibration in the context of agricultural machinery? (2 marks)

a) Measuring the area of the farm

b) Adjusting equipment for optimal performance

c) Setting the speed of machinery

d) Maintaining equipment cleanliness

2. What does Farm Mechanization refer to? (2 marks)

a) The use of animals for farming

b) The introduction of modern machinery in agriculture

c) The use of traditional tools for farming

d) The process of tilling

3. What is Harvesting in agriculture? (2 marks)

a) The process of planting seeds

b) The process of applying fertilizers

c) The process of gathering mature crops from the field

d) The process of tilling the soil

4. What is the purpose of tillage? (2 marks)

a) To prepare the crops

b) To irrigate the crops

c) To apply fertilizers

d) To harvest crops

5. What does Farm Structure refer to? (2 marks)

a) The physical buildings and infrastructure on the farm

b) The process of planting crops

c) The irrigation system in a farm

d) The types of crops grown on the farm

6. Which of the following materials is not suitable for constructing durable workshop walls? (2 marks)

a) Wood

b) Plastic

C) Concrete blocks

d) Glass

7. The three phases of structural engineering include... (2 marks)

a) Planning, Design, and Construction

b) Excavation, Planting, and Harvesting

c) Tillage, irrigation, and Harvesting

d) Surveying, Ploughing, and Seeding

8. Which type of engine operates by burning fuel outside the engine cylinder to generate mechanical work? (2 marks)

a) Internal Combusting Engine

b) External Combusting Engine

c) Diesel Engine

d) Two-Stroke Engine

9. What is alternative name for a crawler tractor? (2 marks)

a) Wheel tractor

b) Power tiller

c) Trac-type Engine

d) Walking tractor

10. Which of the following is not an advantage of using tractors in farming operations? (2 marks)

a) Time efficiency

b) Lower fuel consumption

c) Enhanced land preparation

d) Increased crop yield

Section B: Short Answer Questions (40 marks)

1. Discuss the role of farm mechanization in improving agricultural productivity and the potential barriers to its widespread adoption. **(10 marks)**

2. Analyse the comparative benefits and drawbacks of Draught Animal Power (DAP) versus tractors, focusing on cost-effectiveness and efficiency in Namibian agriculture **(10 marks)**

3. Discuss five (5) factors that affect the application of chemicals using field sprayers. **(10 marks)**

4. Discuss the environmental concerns during agricultural chemical application. **(10marks)**

Section C: Calculations (25 marks)

a) Calculate the mass of an implement that a cow weighing 700 kg can pull, assuming it can exert a force equal to 13% of its body weight. **(5 marks)**

b) Given that a cow weighs 700 kg, calculate the force it can exert in newtons (N), using the acceleration due to gravity as 9.81 m/s^2. **(5 marks)**

c) A cow exerts a force of 6867 N. Calculate the total force exerted when four cows work together. **(5 marks)**

d) Calculate the load a donkey weighing 250 kg can carry on its back, given that it can carry 40% of its body weight. Additionally, determine the total weight a donkey can pull using a cart, given that it can pull three times its body weight.

(5 marks)

e) After calibrating a boom sprayer, calculate its nozzle average output if it has four (4) nozzles: **(5 marks)**

- Nozzle 1 = 250 ml
- Nozzle 2 = 260 ml
- Nozzle 3 = 255 ml
- Nozzle 4 = 200 ml

Section D: Essay Questions (15 marks)

1. Describe the four stages of a four-stroke engine cycle and the role of each stage in the engine's operation. **10 marks)**

2. Explain the significance of farm mechanization in modern agriculture.

(5 marks)

[END OF PAPER]

100 MARKS