



MACHAKOS UNIVERSITY
2020/2021 ACADEMIC YEAR
FACULTY OF AGRICULTURAL SCIENCE
FIRST YEAR FIRST SEMESTER EXAMINATION FOR BACHELOR OF SCIENCE IN
AGRICULTURAL EDUCATION AND EXTENSION

AGN 122 BASIC FARM POWER UTILIZATION AND SOURCES

TIME 2HRS

INSTRUCTIONS

ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE (THIRTY MARKS)

- A. Before operating a tractor, the farm manager should carry out routine checks up. As a student explain any five check points that should be done. (5 marks)
- B. Explain any five road safety when driving a tractor (5 Marks)
- C. Lubrication of engine reciprocating and moving parts elongate the service life. In your own opinion, describe how forced feed lubrication systems can be achieved (10 marks)
- D. High temperatures are generated in the engine during ignition stroke hence cooling system must be incorporated during engine design. Explain the principles behind air cooling (10marks)

QUESTION TWO (TWENTY MARKS)

- A. A farmer is interested in buying a tractor for his farm. He has no basic knowledge is farm machineries. As a student, explain five selection factors that a farmer should consider when buying new tractor (5 marks)
- B. Describe the power transmission in the power tillers (7 marks)
- C. Describe any four sources of power that a farmer can harness in the farm (8 marks)

QUESTION THREE (TWENTY MARKS)

- A. Outline any five benefits of farm mechanization (5 marks)
- B. Engine is a source of power in tractor. Explain in detail the working principles of in internal combustion engine (7 marks)
- C. Describe any four components of the engine highlighting its importance (8 marks)

QUESTION FOUR (TWENTY MARKS)

- A.** Explain the working principles of four stroke cycle engine (8 marks)
- B.** Explain how two stroke engine works (6 marks)
- C.** Differentiate between diesel engine and petrol engine (6marks)

QUESTION FIVE (TWENTY MARKS)

- A.** Fuel is a substance consumed by the engine to produce energy. Explain the following terms
 - i. Volatility (2 marks)
 - ii. Calorific value (2 marks)
 - iii. Ignition quality (2 marks)
- B.** Describe the components of fuel supply system of fuel tanks (8 marks)
- C.** Describe the working principles of Ignition system (6 marks)