



**NATIONAL OPEN UNIVERSITY OF NIGERIA**  
**14/16 AHMADU BELLO WAY, VICTORIA ISLAND, LAGOS**  
**SCHOOL OF SCIENCE AND TECHNOLOGY**  
**MARCH/APRIL 2014 EXAMINATION**

**COURSE CODE: AGM314**

**COURSE TITLE: INTRO TO FARM MECHANIZATION**

**TIME ALLOWED: 2HOURS**

**INSTRUCTION: 6 QUESTIONS ANSWER 4 (25 MARK EACH)**

1a. Define Farm Mechanization and state seven (7) the aims and objectives of Farm Mechanization.

1b. Estimate the velocity ratio and the magnitude of a force to push a 25Kg bag of sand through an inclined plane at angle 30° to the horizontal when its efficiency is 60%.

1c. Define any three (3) of the following terms:

- i. Mechanical Advantage
- ii. Basic Machine
- ii. Velocity Ratio
- iii. Efficiency and
- iv.

2. With the aid of suitable diagram, explain the uses of the following workshop tools:

- i. Round File
- ii. Screw Driver
- iii. Inside Caliper
- iv. Micrometer Screw Gauge

3a. What do you understand by these terms?

- I. I.C.E
- II. Combustion
- III. E.C.E

3b. Determine the swept volume of an I.C.E having a bore radius of 50mm and a stroke length of 124mm.

3c. Describe the operation of internal combustion of an engine.

4a. Briefly explain the following found in farm engines

- i. Bottom dead Centre (b.d.c)
- ii. Engine size
- iii. Piston Displacement
- iv. Compression Ratio
- v. Stroke

4b. Enumerate secondary tillage equipment that can be find in a farm.

4c. Differentiate between spark ignition engine and compression ignition engine.

5a. Explain the operating principles of transmitting power through the use of belt. Illustrate with suitable label diagrams.

5b. A flat leather belt is 70mm wide and 7mm thick. Given that the safe tension per cm of width of the belt is 140N and the belt is used in driving a 360mm pulley at 300rev/min.

Determine:

- i. The allowable tension
- ii. The driving tension
- iii. The power transmitted by the belt.

6a. Briefly explain the following equipment use in the farm

- i. Knapsack
- ii. Sprayer Tractor
- iii. Harrower
- iv. Disc Ridger
- v. Combine Harvester

6b. Distinguish between the fixed and variable costs of owning and operating farm machinery.