NATIONAL OPEN UNIVERSITY OF NIGERIA
14/16, Ahmadu Bello Way, Victoria Island

SCHOOL OF SCIENCE AND TECHNOLOGY
October, 2013 Examination

Course Code: AGM314

Course Title: INTRO TO FARM MECHANIZATION

Time Allowed: 2 Hrs

INSTRUCTIONS: i. Answer FOUR questions in all
ii. All questions attract equal marks **(25 MARK EACH)**

1a. Define the following terms:
a. Mechanical Advantage
b. Farm Mechanization
c. Velocity Ratio
d. Efficiency and
e. Basic Machine

1b. State five (5) aims and objectives of farm mechanization.
1c. A mass of 35kg is to be lifted by a wheel and axle system.
The ratio of wheel to radius of axle is 5:1 Given that the system is 84% efficient;
Determine the effort required to lift the body. Take g = 10m/s2.

2a. Explain the working system of an incline plane and gears.
2b. The tommy bar and pitch of a screw jack are 20cm and 0.5cm respectively. Find its velocit
2c. Two intermeshing gear wheels have 35 and 105 teeth respectively. What is the rotational
of the larger wheel if the smaller wheel rotates at 72 rev per second?

3a. Give five (5) reasons why tillage is considered necessary in farming.
3b. Explain briefly the following terms:

a Zero tillage
b Minimum tillage and
c Maximum tillage

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

4a. Differentiate between spark ignition engine and compression ignition engine.
4b. List the Secondary tillage equipment and describe disc harrows and disc ridgers.
4c. Briefly explain soil management practices for maximal utilization of farm land.

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

6a. Distinguish between the fixed and variable costs of owning and operating farm machinery.
6b. What are the purpose of buildings in farm.