A Constituent College of Kenyatta University

UNIVERSITY EXAMINATIONS 2011/2012 ACADEMIC YEAR

2ND YEAR EXAMINATION FOR THE DEGREE OF BACHELOR OF

SCIENCE IN AGRICULTURE

COURSE CODE/TITLE: ARM 201: AGRICULTURE AND ENT. DEVELOPMENT

END OF SEMESTER:II   DURATION: 3 HOURS

DAY/TIME:THURSDAY: 2.00 TO 5.00 P.M.   DATE:29/03/2012 (A 2)

INSTRUCTIONS

1. Answer **ALL** questions in section **A** and any **TWO** questions in section **B**
2. Calculators may be used.
3. Time allowed is 3 hours.
4. Neat drawings/sketches will be added advantages.

SECTION A: (40 MARKS). ANSWER ALL QUESTIONS.

Question One

a) Define mechanization as used in farm power and machinery.   (2 marks)

b) Differentiate between renewable and non-renewable sources of power. (2 marks)

c) What are the disadvantages of manual power as a source of power in the farm.
                                                                            (2 ½ marks)

d) Define tillage.   (2 marks)

Question Two

a) Define sprinkler irrigation. (2 marks)

b) List the factors that affect soil erosion by water. (2 marks)

c) State the factors that influence the rate of gully erosion. (2 ½ marks)

d) The empirical equation $V_t = 0.152d^{4/9}(G-1)^{1/2}$ is used to determine the threshold Velocity required to initiate movement of particles in the bottom of a stream (bed load movement). Use the equation to determine G(to 1 dp) given that d=20mm, $V_t = 13.3$ m/s (3 marks)

e) What advantages do Disc ploughs have over mould board ploughs? (2 marks)

Question Three

a) What are the functions of the following parts of the mould board plough?

i)	Share	(1mark)
ii)	Land slide	(1 mark)
iii)	Frog	(1 marks)
iv)	The mould board	(1 mark)

b) A disc plough has two angles: name and explain the functions of these angles (4 marks)

Question Four

a) Explain the following as used in field survey

i)	Back Sight	(1 mark)
ii)	Intermediate Sight	(1 mark)
iii)	Fore Sight	(1 mark)
iv)	Bench Mark	(1 mark)
v)	Height of Plane of Collimation	(1 mark)
vi)	Change Point	(1 mark)
vii)	Reconnaissance survey	(1 mark)
viii)	Reduced Level	(1 mark)

b) Explain the functions of the following parts of the tilting level machine:

    i)   Slow motion tangent screw   (1 mark)
    ii)   Eye piece focusing screw   (1 mark)
    iii)   Spirit bubbles   (1 mark)
    iv)   Tilting screw   (1 mark)

SECTION B (30 MARKS) – ANSWER ANY TWO QUESTIONS IN THIS SECTION

Question Five

The following readings were recorded during a field survey of profile leveling: 0.663, 1.946, 1.008, 1.153, 2.787, 2.270, 1.218, and 0.646. The first reading was taken on a bench mark with a reduced level of 98.760m. The instrument was changed after taking the 5th reading. Book these results using the HPC method and calculate the RL of all the STATIONS and carry out arithmetic checks.

Question Six

Using diagrams explain how a four stroke internal combustion engine operates.
(15 marks)

Question Seven

Use a neat sketch to show the components of a trickle irrigation system and explain the advantages and disadvantages of the system.