



SOUTH EASTERN KENYA UNIVERSITY

UNIVERSITY EXAMINATIONS 2017/2018

FIRST SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF SCIENCE IN AGRICULTURE, AGRICULTURAL EDUCATION & EXTENSION AND BACHELOR OF EDUCATION

AEB 201: POWER SYSTEMS & MACHINERY IN AGRICULTURE

DATE: 04TH DECEMBER, 2017

TIME: 1.30 -3.30 PM

Instructions

Answer all questions in section A and any TWO in section B

Section A (30mks)

Q1. Differentiate between two stroke and four stroke cycle engines. (2mks)

Q2. Discuss the various ways of managing labour during its peaks (4mks)

Q3. With an aid of a diagram explain the following terms: (4mks)

- a) Stroke (1mk)
- b) Clearance volume (1mk)
- c) Crankshaft (1mk)
- d) Sump (1mk)
- e) Traction (1mk)

Q4. Describe the following sources of farm power

- i) Electricity (2mks)
- ii) Mechanical (2mks)
- iii) Animal power (2mks)

Q5. Discuss any four methods of increasing wheel traction of a tractor (4mks)

Q6. Calculate the swept volume and compression ratio of four-cylinder engine with a 50cm bore diameter, 10cm stroke length and clearance space volume of 1020cm^3 (5mks)

Section B (40 Marks)

Q7. Discuss the importance of mechanization in agriculture (20mks)

Q8. With an aid of a diagram, describe the crop flow through a grain combine harvester during combining process (20mks)

Q9. a) Give any five disadvantages of using hydro- electric power on farms (5mks)

b) A ground sprayer is fitted with 16 nozzles at a spacing of 250mm. After spraying a distance of 100m in 60 seconds, 9 liters of pesticide solution had to be refilled in the sprayer tank.

i) Calculate the effective spraying width (5mks)

ii) Calculate the test area (5mks)

iii) Determine the application Rate (5mks)