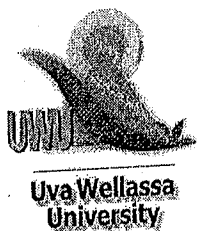
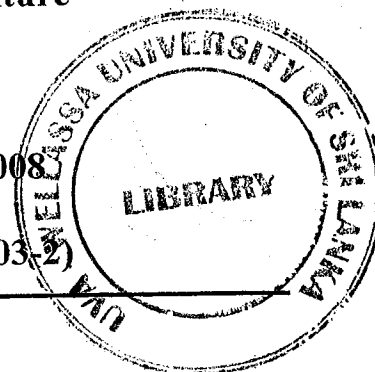


Faculty of Animal Science & Export Agriculture  
Uva Wellassa University



Year II Semester I  
End Semester Examination – June/ July 2008

Agricultural Farm Mechanization (EAG 2203-2)



**Instructions**

Answer all questions

No. of questions : Four (4)

No. of pages : Three (3)

Time : Two Hours (2hrs)

Total marks allocated : 100%

- 1.
- a. Discuss the purpose of land preparation
- b. Write short notes on the following
- i. Minimum tillage
  - ii. Zero tillage
  - iii. Tillage and crop production
- c. Define the following terms
- i. Draft
  - ii. Specific draft
  - iii. Work
  - iv. Power
  - v. Drawbar power
- d. The total draft of a 10cm single bottom single animal drawn mould board plough was 500N while ploughing at 1.5 km/ hr.
- Determine
- i. The theoretical rate of work in **ha/ hour**.
  - ii. The approximate power of the animal.
  - iii. The approximate body weight of the animal used for this operation.
- (Assumption: pulling force = 10% of the body weight of the farm animal)

2.

- a. Discuss the following
  - i. Principle of carburetion
  - ii. The thermostat valve
  - iii. Valve timing system
  - iv. The ignition system of the petrol engine
  - v. Power transmission
- b. What is a four stroke cycle engine?
- c. What is a two stroke cycle engine?
- d. What actually takes place in the following strokes
  - i. Intake
  - ii. Compression
  - iii. Power
  - iv. Exhaust
- e. Determine the indicated power of an engine in units of KW that has mean effective pressure of 1050KPa. The engine is a four stroke cycle engine and has three cylinders. The bore is 109mm, the stroke is 115mm and the engine speed is 3000rpm.

3.

- a. How do you compare a diesel engine with a gasoline engine?
- b. Explain briefly the following in relation to internal combustion engine
  - i. Volumetric efficiency
  - ii. Mechanical efficiency
- c. Explain briefly the importance of following parts of a tractor engine
  - i. Oil sump
  - ii. Fuel filters
  - iii. Fly wheel
  - iv. Injector pump

- d. Stroke bore ratio of three cylinder four stroke diesel tractor engine is 1:2 and its compression ratio is 18:1. The radius of the crank shaft is 60mm. if the engine develop 24KW at the speed of 2400rpm, calculate
- The actual air consumption within one minute, when the volumetric efficiency is at 90%.
  - Total volume of the combustion chamber in  $\text{cm}^3$

4.

a.

- Why is heat exchange important in dairy industry?
- Graphically explain the temperature fluctuation in co- current and counter current heating.
- Explain the mechanism and heat exchange in a Plate Heat Exchanger (PHE) in an ice cream factory.

b.

- How are the homogenizers used in dairy industry classified?
- Explain the homogenization procedure in an ice cream factory using a two stage homogenizer.

