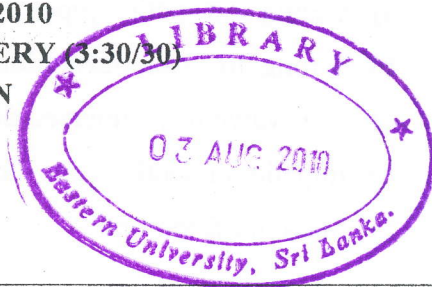


EASTERN UNIVERSITY SRILANKA, FACULTY OF AGRICULTURE
FIRST YEAR SECOND SEMESTER EXAMINATION IN AGRICULTURE 2006/2007
(EXTERNAL DEGREE) April 2010
AEN 1201 FARM POWER AND MACHINERY (3:30/30)
PRACTICAL EXAMINATION



Answer all questions
Time: 02 hrs

A four stroke 4 cylinder gas engine has cylinder diameter of 25cm, stroke-bore ratio is 1:8, clearance volume 4500cm^3 , engine speed 240 rev/min, mean effective pressure 700 kPa and mechanical efficiency is 75%. Calculate the following.

- (i) Indicated power
- (ii) Break power
- (iii) Compression ratio
- (iv) Swept volume

(a) The following faults in a petrol engine cause poor starting of the engine. Give the appropriate trouble shooting method to overcome these problems

- a) Weak spark plug
- b) Loose connection in the primary circuit
- c) Short circuiting of ignition coil
- d) Loose/dirty connections of primary or secondary circuits
- e) Weak battery
- f) Dirty/loose battery terminals
- g) Defective self starter
- h) Restricted/defective fuel supply
- i) Restricted air supply
- j) Engine overheating

(PTO)

(b) Briefly state the remedies for the following troubles in a centrifugal pump

- a) Casing and suction pipe not completely filled with water
- b) Wrong direction of rotation of the impeller shaft
- c) Foot valve not immersed deep enough
- d) Impeller or suction pipe clogged with mud, leaves, stones etc.
- e) Suction lift too high

03. (i) List three types of nozzles and draw the spray pattern produced by each.

(ii) List three most important factors that affect the performance of a sprayer.

(iii) Distinguish between an insecticide in the form of a solution, a suspension and an emulsion. Which requires constant agitation to prevent the chemical settling out?

(vi) A knapsack sprayer fitted with hollow cone nozzles is required to be calibrated for an application rate of 150 l/ha. The sprayer speed is 6.5 Km/hr and the nozzle height is 50 cm from the ground. The swath width of the sprayer is 1m. Calculate the volume flow rate of the nozzle.

04. (a) Sketch the mould board plough and label the main parts of it.

(b) Under what conditions the following are preferred in relation to land preparation.

1. Bar share
 2. Slatted mould board
 3. Chain harrow
 4. Chisel plough
 5. Sub soiler
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