

EASTERN UNIVERSITY, SRILANKA
FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE 2012/2013
(Jan / Feb 2015)
AE 1101 – FARM MECHANIZATION

Practical Examination

25 APR 2015

Answer all questions
Time allowed: One hour

01.

- (a) Write 3 important differences in terms of the **principle of operation** of a compression ignition engine as compared to a spark ignition engine.
- (b) How is the engine vibration minimized in a multi cylinder engine?
- (c) A four cylinder four stroke diesel engine has the following dimensions.
- Cylinder bore = 20 cm*
Stroke-bore ratio = 2.0
Clearance volume = 2250 cm³
Mean effective pressure = 700 kPa
Mechanical efficiency = 80%
Engine speed = 1600 rpm
- Calculate,
- (i) Indicated power
(ii) Brake power
(iii) Compression ratio
(iv) Swept volume
- (d) A tractor is used to operate a horizontal rotating knife in a stalk cutter. The tractor P.T.O runs at 540 rpm and drives a pinion gear of 12 teeth. Driven gear has 24 teeth. Find out the speed of knife blade.

02.

- (a) Briefly discuss the **mode of operation** of the following implements in the field:
- (i) Mould board plough
(ii) Disc plough
(iii) Rotary plough
(iv) Tine tiller
(v) Spike tooth harrow
- (b) A sprayer travels at a speed of 5 km/h. The solution in the tank is prepared by 5 l of 2-4-D spray concentrate and 145 l of water. The swath width of the spray pattern from the nozzle is 2.5 m and it puts out 75 l/h.
- (i) What is the application rate of 2-4 -D?
(ii) What is the area covered by the sprayer tank?