

**KERALA AGRICULTURAL UNIVERSITY**  
B.Sc (Hons.) Ag. Degree Programme 2012 & Previous Admission  
II<sup>nd</sup> Semester Re- Examination-August 2016

Cat. No: Engg 1202

Title: Farm power & machinery (1+1)

Marks: 80.00

Time: 3 Hrs

(10 x 1 =10)

**I Fill up the blanks/Define**

- \_\_\_\_\_ is a special arrangement of gear to permit one of the rear wheels of the tractor to rotate slower or faster than the other.
- Field capacity
- Tilt angle
- Compression ratio
- Dead furrow
- Piston displacement
- KAMCO power tillers are manufactured in Kerala by \_\_\_\_\_
- Combine harvesters are machines which can do \_\_\_\_\_ and \_\_\_\_\_ simultaneously.
- \_\_\_\_\_ wheels are attached to tractors for ploughing wet lands for paddy cultivation.
- In \_\_\_\_\_ engines the air-fuel mixture is ignited by a spark.

**II Write short notes ANY TEN**

(10 x 3 =30)

- Differentiate between Otto cycle and Diesel cycle.
- How does splash system of lubrication work in an I.C engine?
- Drag harrow.
- Valve operating mechanism.
- Define stroke bore ratio, swept volume and compression ratio.
- What is a dynamometer? What are the different types of dynamometers available?
- Utilization of solar energy on farms.
- Piston rings.
- Oil bath air cleaner.
- Firing order.
- Differentiate between detonation and knocking.
- Calculate the BHP of a 4 stroke, 4 cylinder IC engine with a cylinder bore of 12.5 cm, stroke length 15cm, crankshaft speed 1000 rpm, FHP 30 and mean effective pressure 7 kg/cm<sup>2</sup>

**III. Explain ANY SIX of the following**

(6 x 5 =30)

- State different types of mould board with neat sketch. Explain where each one is used.
- Explain different types of secondary tillage implements.
- What is a seed drill? Explain the different types of seed metering mechanisms available.
- What is a duster? Explain the different types of dusters available
- Write short notes on position control, draft control and mixed control in hydraulic control system.

6. What is three point linkage? What are its advantages?
7. What is the purpose of lubrication in an engine? What are the different types of lubricants? State the qualities of a good lubricant.
8. A 4 cylinder 4 stroke engine has cylinder diameter of 25 cm, stroke bore ratio 1.8, clearance volume  $4500 \text{ cm}^3$ , engine speed 240 rpm, mean effective pressure  $6.8 \text{ kg/sq.cm}$ , and mechanical efficiency 75%. Calculate IHP, BHP, Compression ratio and swept volume.

**IV. Write essay on ANY ONE**

(1 x 10=10)

1. Write about the different sources of energy available on farm. Discuss about status of farm mechanization in Kerala.
2. What are the factors to be considered in estimating the cost of operation of a tractor? Find the cost of using a tractor per hp-hour when the cost of a 35 H P Diesel tractor is Rs.155000/-, life of tractor is 10 years, rate of interest is 12% and working hours per year are 1000 hours.

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