

MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE
SEMESTER END EXAMINATION

B.Sc. (Agri.)

Semester : V (New)
Course No. : ENGG 353
Credits : 2(1+1)

Term : I Academic Year : 2010-11
Title : Farm Power and Machinery

Day & Date : Monday, 25.10.2010

Time : 14.00 to 16.00

Total Marks : 40

- Note :
1. Solve ANY FIVE questions from SECTION "A".
 2. All questions from SECTION "B" are compulsory.
 3. All questions carry equal marks.
 4. Draw neat diagrams wherever necessary.

SECTION "A"

Q.1 Give the merits and demerits of animal and mechanical power.

Q.2 Differentiate between diesel and petrol engine.

Q.3 A four stroke engine has mean effective pressure of 7 kg./cm^2 , area of piston 730 cm^2 , stroke length 45 cm , torque due to break load is 110 kg-m , fuel consumed per hour is 4.5 kg and working speed is $120 \text{ revolution per minute}$. Find IHP, BHP, mechanical efficiency, specific fuel consumption and swept volume.

Q.4 a) Enlist the different sowing methods.

b) The following results were obtained while calibrating the seed drill.

Calculate the seed rate in kg/ha .

- 1) No. of furrow openers – 10
- 2) Spacing between furrow openers – 20 cm .
- 3) Diameter of drive wheel – 1.5 meter .
- 4) Speed – $100 \text{ revolutions per minute}$
- 5) Seed collected – 4 kg .

Q.5 Discuss the factors governing selection of a tractor.

Q.6 a) Enlist different seed metering mechanisms.

b) A three bottom tractor plough cuts rectangular furrow each 23 cm wide and 15 cm deep. If the average resistance of soil is 0.75 kg/cm^2 , calculate the horse power of the tractor. The working speed of tractor is 4 kg/hr .

Q.7 a) Enlist the objectives of tillage.

b) Give the classification of plant protection equipment.

SECTION "B"

Q.8 Define.

- 1) Compression ratio
- 3) Harvesting
- 5) Tillage

- 2) Thermal efficiency
- 4) Disk angle

Q.9 Fill in the blanks.

- 1) A strong healthy man can develop about 0.1 HP.
- 2) is horizontal component of pull parallel to the line of motion.
- 3) tilt angle is the angle at which the plane of the cutting edge of disk is inclined to vertical line.
- 4) Cam shaft rotates at the speed of engine.
- 5) furrow is that part of plough bottom to which share, mould board and land slide are attached.

Q.10 State True or False.

- 1) BHP of an engine is always more than its IHP. X
- 2) Two stroke cycle engine is provided with valves. X
- 3) Vertical suction of M.B. plough is responsible for its proper penetration angle. ✓
- 4) Thermal efficiency of four stroke cycle engine is more than two stroke cycle engine. X
- 5) Seed drill maintains plant to plant and row to row distance. X