

**MAHARASHTRA AGRICULTURAL UNIVERSITIES EXAMINATION BOARD, PUNE**  
**SEMESTER END EXAMINATION**

**B.Sc. (Hons.) Agriculture**

<b>Semester</b> : III (New)	<b>Term</b> : I	<b>Academic Year</b> : 2019-20
<b>Course No.</b> : ENGG 232	<b>Title</b> : Farm Machinery and Power	
<b>Credits</b> : 2 (1+1)		
<b>Day &amp; Date</b> : Saturday, 09.11.2019	<b>Time</b> : 09.00 to 11.00	<b>Total Marks</b> : 40

- Note :**
1. Solve ANY EIGHT 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 What is Farm Mechanization? Give its benefits and limitations.
- Q.2 What are the important adjustments of a Mould Board Plough? What are the effects of vertical suction and horizontal suction in a Mould Board Plough? Explain with neat diagram.
- Q.3 A four cylinder 4 stroke gas engine has cylinder diameter of 25 cm, stroke-bore ratio is 1.8, clearance volume  $4500 \text{ cm}^3$ , engine speed 240 rev/min, mean effective pressure 700 kPa and mechanical efficiency is 75%. Calculate i) ip ii) bp iii) compression ratio iv) swept volume.
- Q.4 What are the different types of seed metering mechanism? Explain the working of fluted feed type with diagram.
- Q.5 A five tine cultivator having tine spacing 8cm, working depth of 5cm and speed is 3km/hr. Turning loss is 10%. Soil resistance is  $0.6 \text{ kg/cm}^3$ . Width of each furrow is 5cm. Calculate 1) Time to cover one hectare, ii) Maximum draft, iii) Required power.
- Q.6 What is harrow? Describe in detail the working of a tractor drawn off-set disc harrow.
- Q.7 The following results were obtained while calibrating a seed drill. Calculate the seed rate per hectare where i) No. of furrows=10, ii) Spacing between furrows=20cm, iii) Diameter of drive wheel=1.5 metre, iv) Speed=500 rev/min, v) seed collected=20 kg.
- Q.8 What is tillage? What are the main objectives of tillage?
- Q.9 Enlist different types of sprayers. Write advantages and disadvantages of spraying.
- Q.10 What is the purpose of engine cooling? What are the different methods of engine cooling? Write advantages and disadvantages of air cooled engine.

(P.T.O.)

**SECTION "B"**

Q.11 Define the following terms.

- |                     |                    |
|---------------------|--------------------|
| 1) Tappet clearance | 2) Firing Interval |
| 3) Cetane Number    | 4) Stroke          |

Q.12 Fill in the blanks.

- 1) \_\_\_\_\_ is a machine to cut herbage crops and leave them in swath.
- 2) \_\_\_\_\_ is a manual pull type hoe suitable for weeding and inter culture of upland row crops in black cotton soil regions.
- 3) \_\_\_\_\_ is an assembly of concave discs mounted on a common shaft with spods in between.
- 4) \_\_\_\_\_ type tractors are best suited for farm operations like ploughing, disking, harrowing etc.

