



**KERALA AGRICULTURAL UNIVERSITY**  
**B. Tech. (Agrl. Engg.) 2021 Admission**  
**V Semester Final Examination – January 2024**

**Fpme.3110**

**Farm Machinery and Equipment - I (2+1)**

**Marks: 50**  
**Time: 2 hours**

**I Fill in the blanks (10x1=10)**

1. Tilt angle of a disc plough is normally adjusted in the range of..... degrees.
  2. The degree of soil pulverization by a mould board plough can be measured by .....of soil particles.
  3. .... is a self-propelled machine which is used mainly to exert a powerful tractive force for pulling other machines.
  4. The ultra-low volume sprayers apply up to..... liters of spray volume per hectare.
  5. A paddy transplanter uses either root washed type seedlings or..... seedlings.
- State True or False**
6. On an average, the bullocks can exert draft force equal to one tenth of their body weight.
  7. A swinging drawbar reduces side draft.
  8. A disc plough penetrates into the ground by suction.
  9. The drillability of a fertilizer used in fertilizer drills is directly proportional to the angle of repose of the fertilizer.
  10. In a stationary field chopper employing flywheel type cutter head, the length of cut can be increased by increasing the number of knives.

**II Write short notes on ANY FIVE of the following (5x2=10)**

1. Define horizontal suction and vertical suction of MB plough.
2. Define secondary tillage operation.
3. Explain in brief the effective field capacity and field efficiency.
4. What do you mean by calibration of a seed drill?
5. What are the different sources of power available in the field?
6. What do you understand by heat treatment of steel? Enlist different heat treatment process.
7. Define minimum tillage?

**III Answer ANY FIVE of the following (5x4=20)**

1. Explain tillage? What are the advantages of tillage?
2. Explain the forces acting upon a tillage implement with the help of an illustration.
3. Define seed drill? What are the functions of the seed drill? Enlist different major components of seed drill.
4. Explain in brief about different methods of sowing
5. Explain advantages of using disc plough over MB plough. What are the disadvantages of using Disc plough?
6. Define Depreciation. Enlist different methods for estimation of depreciation of farm machinery.
7. What is the drawbar HP of the tractor? If the drawbar pull and tractor forward speed is 72 kN and 4 km/hr.

**IV Write an essay on ANY ONE of the following (1x10=10)**

1. Define farm mechanization? State advantages and limitations of farm mechanization in India.
2. A 2-bottom 350 mm mould board plough is operated at 5 km/hr and maintained at 150 mm depth in a sandy soil. The specific draft of the plough is  $4 \times 10^{-2}$  N/mm<sup>2</sup>. Calculate
  - (i) the draw bar power requirement in kW.
  - (ii) the area covered in hectares per hour if the field efficiency is 75%.

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