



KERALA AGRICULTURAL UNIVERSITY
B. Tech. (Agri. Engg.) 2024 Admission
III Semester Final Examination – January 2026

FMP 2104

Farm Machinery and Equipment I (2+1)

Marks: 50

Time: 2 hours

I Fill in the blanks (10x1=10)

1. A mould-board plough is mainly used for
2. The power required to pull tillage implements is called
3. The ratio of actual field capacity to theoretical field capacity is known as
4. Heat treatment that increases hardness by rapid cooling is known as
5. A Leveller is used for the agricultural field.

State True or False

6. Heat treatment is used to change material properties like strength and hardness.
7. Farm mechanization always increases the cost of farming.
8. Disc plough works better than mould-board plough in hard, dry soils.
9. Seed metering systems in seed drills are used to control seed depth.
10. High carbon steel is commonly used for making cutting blades of implements.

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

1. What are the major limitations of farm mechanization in small farms?
2. Differentiate between primary tillage and secondary tillage.
3. What is the function of a furrow opener? Mention two types.
4. Why is heat treatment necessary for farm machinery components?
5. Explain the concept of unit operations in crop production.
6. What is the purpose of calibration of seed drills?
7. Explain factors affecting field efficiency with examples.

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

1. Explain hitching systems used in tractors and their hydraulic controls.
2. Explain various materials used in the construction of farm machines and the role of heat treatment in improving their performance.
3. Describe the procedure for calibration of seed drills.
4. Explain various heat treatment processes like annealing, hardening, tempering, normalizing, case hardening, cyaniding and nitriding.
5. A 7-tyne cultivator of 1.75 m width is operated at 5 km/h. Field efficiency is 75%. Find effective field capacity.
6. Explain Testing and evaluation as per BIS.
7. A seed drill delivers 1.2 kg seed in 20 wheel revolutions. The ground wheel circumference is 2 m. Width of drill = 2.5 m. Find seed rate (kg/ha).

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

1. Critically evaluate the role of farm mechanization in increasing agricultural productivity in India.
2. Describe the major research and development trends in agricultural machinery in India and globally.
