KERALA AGRICULTURAL UNIVERSITY
B.Tech.(Agrl. Engg.) 2024 Admission
I Semester Final Examination - March 2025

AGE 1102 **Introduction to Agricultural Engineering (3+1)** **Marks:50**
Time: 2 hours

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

1. Wind energy conversion systems primarily use ..... to generate power.
2. Primary tillage is performed using implements such as ..... and .....
3. The three-point hitch system is used for attaching ..... to a tractor.
4. The water retained in small pores of the soil, which is unavailable to plants, is known as .....
5. ..... is a method of food preservation that removes moisture to extend shelf life.
6. ..... is a preservation method where food is exposed to high temperatures to destroy microorganisms.

State True or False

7. Thermal processing destroys harmful microorganisms in food.
8. Check basin irrigation is best suited for sandy soils.
9. A disc harrow is used for primary tillage.
10. The power take-off (PTO) is used to transfer power from a tractor to an implement.

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

1. What is the importance of ballast in tractors?
2. Differentiate between primary and secondary tillage implements with examples.
3. What is precision planting?
4. Differentiate between spark ignition and compression ignition engines.
5. How the discharge through a rectangular weir can be calculated?
6. How the available water holding capacity (mm / meter depth of soil) can be calculated?
7. What is meant by primary processing in food and agricultural products?

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

1. Discuss the scope of higher studies in agricultural engineering, both in India and abroad, including the types of courses and research opportunities available.
2. What is seed calibration, and why is it important in agriculture? Explain how seed calibration is done in a seed drill.
3. Explain the procedure to find out field capacity and field efficiency of a transplanter (6 row riding type) with equations and necessary assumptions.
4. Briefly explain the methods of grain moisture content measurement.
5. Discuss about different packaging materials for:
   a) Dried foods
   b) Frozen products and
   c) Fresh produce
6. Define green house and explain its major components with a neat sketch.
7. What is meant by secondary processing in food and agricultural products?

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

1. Explain the working principle of Centrifugal Pump with the help of neat Diagram. Also Discuss the constructional details of Centrifugal Pump.
2. What are the different types of modern grain storage structures? Explain their construction and working principles.

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