

Duration: 3 Hours

Max. Marks: 100

**PART - A (MCQ) (20 × 1 = 20 Marks)**

Answer ALL Questions

*Marks K-  
Level CO*

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|--|---|----|-----|
| 1. What is the primary goal of mechanized agriculture?<br>(a) Increased manpower (b) Reduced costs (c) Higher yield (d) All of the above                               | 1 | K1 | CO1 |
| 2. Which of the following machines is used for tillage operations?<br>(a) Harrow (b) Planter (c) Seed drill (d) Combine harvester                                      | 1 | K1 | CO1 |
| 3. Agricultural automation primarily involves?<br>(a) Manual operations (b) Robotics<br>(c) Chemical application (d) Traditional Methods                               | 1 | K1 | CO1 |
| 4. Which of the following is NOT an agricultural vehicle robot?<br>(a) Driverless tractor (b) Weeder robot (c) Thresher (d) Planter                                    | 1 | K1 | CO1 |
| 5. GPS technology in agriculture is used for?<br>(a) Communication (b) Precision farming (c) Data storage (d) Crop variety development                                 | 1 | K1 | CO2 |
| 6. What does RTK GPS stand for?<br>(a) Real-time kinematic (b) Remote tracking kinematic<br>(c) Rapid technology kinematic (d) Regional tracking knowledge             | 1 | K1 | CO2 |
| 7. Variable Rate Application in precision farming refers to?<br>(a) Changing seed types (b) Adjusting inputs<br>(c) Modifying crop rotation (d) Crop health management | 1 | K1 | CO2 |
| 8. What is a CAN in precision agriculture?<br>(a) Controller Area Network (b) Cumulative Area Network<br>(c) Computer Area Network (d) Controlled Application Network  | 1 | K1 | CO2 |
| 9. What is the function of a hitch in agriculture machinery?<br>(a) Transportation (b) Control of load (c) Attach implements (d) Weight measurement                    | 1 | K1 | CO3 |
| 10. Which type of hitch is commonly used in modern tractors?<br>(a) Drawbar hitch (b) 3-point hitch (c) Skid hitch (d) Chain hitch                                     | 1 | K1 | CO3 |
| 11. The main advantage of traction aids is?<br>(a) Cost reduction (b) Increased fuel efficiency (c) Enhanced grip (d) Better navigation                                | 1 | K1 | CO3 |
| 12. Traction models in tractors help in?<br>(a) Load calculation (b) Power optimization (c) Weight reduction (d) Increasing speed                                      | 1 | K1 | CO3 |
| 13. Weed management is important for?<br>(a) Water management (b) Crop yield (c) Climate control (d) Soil fertility  | 1 | K1 | CO4 |
| 14. Which of the following is a mechanical weed management technique?<br>(a) Pesticides (b) Crop rotation (c) Tillage (d) Fertilization                                | 1 | K1 | CO4 |
| 15. Which system integrates multiple cropping techniques?<br>(a) Mono-cropping (b) Conventional cropping (c) Agroforestry (d) Terrace farming                          | 1 | K1 | CO4 |
| 16. Tillage equipment is designed for?<br>(a) Weed management (b) Soil aeration (c) Planting (d) Harvesting  | 1 | K1 | CO4 |
| 17. Field capacity refers to?<br>(a) Area covered per hour (b) Volume of storage<br>(c) Power consumption (d) Weight handling  | 1 | K1 | CO5 |
| 18. Draft in agricultural machinery refers to?<br>(a) Speed of operation (b) Horizontal force (c) Vertical load (d) Power usage  | 1 | K1 | CO5 |

19. Pneumatic conveyors are typically used for? 1 K1 CO5  
 (a) Liquid transfer (b) Seed transportation (c) Fuel supply (d) Air regulation
20. Which factor is NOT considered in machinery selection? 1 K1 CO5  
 (a) Cost (b) Efficiency (c) Aesthetic value (d) Field conditions

**PART - B (10 × 2 = 20 Marks)**

Answer ALL Questions

21. Discuss the evolution of mechanized agriculture. 2 K1 CO1
22. Briefly describe the types of robots used in agriculture. 2 K2 CO1
23. Explain the role of GPS in precision farming. 2 K2 CO2
24. Differentiate between differential GPS and RTK GPS. 2 K2 CO2
25. What are traction models? How do they assist in agricultural machinery design? 2 K1 CO3
26. Describe the importance of soil compaction and traction aids. 2 K2 CO3
27. Explain the different methods of soil tillage. 2 K2 CO4
28. What are the mechanical tools used for weed management? 2 K1 CO4
29. Discuss how field efficiency is calculated in machinery selection. 2 K2 CO5
30. Explain the power and draft requirements for agricultural machinery. 2 K2 CO5

**PART - C (6 × 10 = 60 Marks)**

Answer ALL Questions

31. a) i) Explain the agricultural automation process using robotics. 5 K2 CO1  
 ii) Describe different planting machines used in mechanized agriculture. 5 K2 CO1
- OR**
- b) i) Describe the role of agricultural vehicles in automation. 5 K2 CO1  
 ii) How does agricultural automation impact labor and yield? 5 K2 CO1
32. a) Explain the use of sensors in precision agriculture and the benefits of GIS in crop management. 10 K2 CO2
- OR**
- b) Discuss the importance of Variable Rate Technology (VRT) and the Controller Area Network (CAN) in precision agriculture. 10 K2 CO2
33. a) What are the principles of hitching in agricultural machinery and explain tire and traction models in tractors? 10 K2 CO3
- OR**
- b) Discuss the testing procedures for tractors and traction aids. 10 K2 CO3
34. a) Describe the various methods of tillage and explain how weed management is integrated with cropping systems. 10 K2 CO4
- OR**
- b) Discuss the mechanical tools used in weed management. 10 K2 CO4
35. a) Explain the field capacity and efficiency of harvesting machines. 10 K2 CO5
- OR**
- b) Describe the draft and power requirements in large-scale farming machinery. 10 K2 CO5
36. a) i) Discuss how precision agriculture improves field management. 5 K2 CO4  
 ii) Explain how agricultural robots perform mechanical cultivation. 5 K2 CO5
- OR**
- b) i) How can automation reduce soil compaction during tillage? 5 K2 CO4  
 ii) Explain the future of weed management through robotics. 5 K2 CO5