A **Reg. No. :** | | | | | | | | | | | | |

Question Paper Code: UA405

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2025

Professional Elective

Agricultural Engineering

21AGV405– AUTOMATION IN AGRICULTURE

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Canal irrigation is generally preferred in _____ CO1 U

   (a) Non-alluvial canal (b) Non-perennial canal (c) Alluvial canal (d) Feeder canal

2. Which of the following is the quality of a good irrigation method? CO1 U

   (a) Leached Fertilizers (b) Increased Yield

   (c) Drainage Troubles (d) Soil Erosion

3. GIS represents a location in _____ dimensional coordinates. CO1 U

   (a) 2 b) 3 c) 5.1 d) 8

4. Which of the following is an example of a raster data model in GIS? CO1 U

   (a) Remote Sensing Imagery (b) Image Classification

   (c) Points, lines (d) Digital Elevation

5. Which component of robotics is responsible for moving robot parts? CO1 U

   (a) Sensors (b) Actuators (c) Control Systems (d) Artificial Intelligence

6. What type of algorithms are used for object recognition in robotics? CO1U

   (a) Feedback control algorithms (b) Trajectory planning algorithms

   (c) Deep learning algorithms (d) Reinforcement learning algorithms

7. Float switches are commonly used to measure CO1 U

   (a) Soil moisture levels (b) Ambient temperature

   (c) Water levels in tanks (d) Solar radiation intensity

8. Actuators in an automated irrigation system are responsible for: CO1U

(a) Processing sensor data (b) Controlling water flow

(c) Generating electricity (d) Transmitting data to the cloud

9. What is the main goal of precision agriculture? CO1 U

(a) Increase efficiency (b) Optimize resource utilization

(c) Maximize yields (d) Enhance sustainability

10. What is the primary purpose of robotic harvesters? CO1U

(a) Control pests (b) Monitor soil moisture

(c) Harvest ripe crops (d) Analyze weather data

PART – B (5 x 2= 10 Marks)

11. What are the types of traditional irrigation methods ? CO1 U

12. What are the advantages of presicion farming? CO 1 U

13. Briefly explain closed-loop control systems in robotics. CO 1U

14. Explain the role of a charge controller in a solar-based automatic system. CO 1U

15. What is the primary function of drones in agriculture? CO 1 U

PART – C (5 x 16= 80Marks)

16. (a) Explain the drip irrigation system, including its operation and installation process with a neat sketch. How would you apply this system to optimize water use in a specific crop field? Additionally, discuss the merits and demerits of using drip irrigation in this context CO3- App (16)

Or

(b) Briefly explain about Remote Monitoring Design of Automatic Irrigation System, Components and working of the system with Block diagram? CO3-App (16)

17. (a) Analyze the principles of precision farming and explain how they work together to enhance agricultural practices. Include a neat sketch to illustrate the integration of technologies such as GPS, sensors, and data analytics. How do these technologies contribute to improving crop management and resource efficiency? CO4- Ana (16)

Or

	(b)	Analyze the role of Geographic Information Systems (GIS) in managing agricultural data. Explain its methods and provide a neat sketch to illustrate how GIS integrates various data sources for mapping and analysis. Assess the impact of GIS on decision-making and resource management in agriculture.	CO5- Ana	(16)
18.	(a)	Why programming languages and algorithms are important in robotics, and what are some common examples?	CO1- U	(16)
		Or		
	(b)	How does robotics utilize AI and machine learning to enhance capabilities?	CO1- U	(16)
19.	(a)	How do float switches contribute to measuring water levels in agricultural applications?	CO1- U	(16)
		Or		
	(b)	Explain the importance of remote monitoring and control in modern agriculture.	CO1- U	(16)
20.	(a)	Discuss the significance of soil moisture sensors in irrigation management and their impact on crop productivity.	CO1- U	(16)
		Or		
	(b)	How do predictive analytics empower farmers in making informed decisions and optimizing agricultural practices?	CO1- U	(16)