Reg. No. : | | | | | | | | | | | | |

Question Paper Code:UA405

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

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. 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

2. A deficit of sediments in flowing water may cause a river CO1 -U

   (a) Degrading type (b) Aggrading type (c) Meandering type (d) Sub-critical type.

3. A traditional method traces geographical form using _____. CO1 -U

   (a) Directly (b) Indirectly (c) Digitizing tablet (d) None

4. Which of the following remote sensing technologies use sound? CO1 -U

   (a) RADAR (b) Colour Infrared (c) SONAR (d) LORAN

5. Which fundamental aspect of robotics is primarily concerned with designing intuitive interfaces and ensuring safety in collaborative environments? CO1 -U

   (a) Mechanics (b) Sensors

   (c) Human - Robot Interaction (d) Artificial Intelligence and Machine Learning

6. In precision agriculture, what role do robotics play in resource application? CO1 -U

   (a) Precise seeding (b) Optimizing irrigation

   (c) Assessing plant health (d) Detecting pests

7. Which type of sensor uses ultrasonic waves to measure water levels? CO1 -U

(a) Capacitive sensor (b) Pressure transducer

(c) Ultrasonic sensor (d) Conductivity sensor

8. What is the primary advantage of using solar energy in agriculture? CO1 -U

(a) Reduced dependence on fossil fuels (b) Increased water consumption

(c) Higher equipment costs (d) Limited scalability

9. How do smart irrigation systems conserve water? CO2 -U

(a) By watering randomly (b) By watering only when necessary

(c) By flooding fields (d) By ignoring soil moisture

10. What is a benefit of implementing automation in greenhouses? CO1 -U

(a) Increased manual labor (b) Reduced efficiency

(c) Optimized conditions (d) Increased resource waste

PART – B (5 x 2= 10Marks)

11. Write about need of Automation in agriculture ? CO1 -U

12. Explain about Remote Sensors? CO1 -U

13. Name two examples of sensors commonly used in robotics. CO1 -U

14. How would you use float switches to monitor and control water levels in a reservoir? CO2 -App

15. What is the key role of predictive analytics in agriculture? CO1 -U

PART – C (5 x 16= 80Marks)

16. (a) Analyze the effectiveness of remote monitoring and control systems in managing automatic irrigation. How do these systems integrate with sensors and control technologies to optimize irrigation schedules and resource use? Evaluate their impact on water conservation, operational efficiency, and overall crop management. CO3 -Ana (16)

Or

(b) Write the needs of automation in agriculture & Benefits of using automation system in agriculture sector? CO3 -Ana (16)

17.	(a)	What is Remote Sensing and its working principles of remote sensing with neat sketch?	CO1 -U	(16)
		Or		
	(b)	Briefly explain about Geographic Information System (GIS) and its methods with neat sketch?	CO1 -U	(16)
18.	(a)	How would you integrate mechanics, sensors, and actuators to enhance the performance of a robotic system used in a manufacturing process? Discuss how each component contributes to the robot's accuracy, efficiency, and overall functionality	CO1 -U	(16)
		Or		
	(b)	What are the key aspects of control systems in robotics, and how are they applied?	CO1 -U	(16)
19.	(a)	How would you implement an IoT-based automated irrigation system to optimize water management in agriculture? Discuss the integration of sensors, data analytics, and automated controls to improve irrigation efficiency and reduce water waste.	CO1 -U	(16)
		Or		
	(b)	What role do microcontrollers or SBCs play in IoT-based irrigation systems?	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)	Explain the role of IoT systems in livestock management and how they enhance productivity and animal welfare.	CO1 -U	(16)