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

Question Paper Code: U9371

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

Open Elective

Electrical And Electronics Engineering

21UEE971-DRONE TECHNOLOGIES

(Common To All Branches)

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (10 x 1 = 10 Marks)

1. Components of UAS does not consists of _____ CO1-U

   (a) UAV (b) Ground based controller

   (c) Air strip for landing (d) Communication

2. As per drone categories in India weight of the Nano drone should be _____ CO1-U

   (a) More than 250gram (b) Less or equal to 250gram

   (c) 250gram to 2kg (d) 2kg to 4kg

3. As per the drone categories in India weight of the Large category drone should be _____ CO1-U

   (a) 2kg to 25kg (b) 25kg to 150kg (c) 150kg or more (d) less than 100kg

4. Which of the following components is primarily responsible for stabilizing a drone in flight? CO1-U

   (a) Propellers (b) GPS Module (c) Gyroscope (d) Battery

5. Which application is commonly linked with drone operations via mobile devices? CO1-U

   (a) Video editing software (b) Drone navigation and control app

   (c) Cloud storage service (d) Photo gallery app

6. Which of the following is not a typical use of removable storage devices in drones? CO1-U

(a) Transferring data between devices

(b) Storing high-resolution images and videos

(c) Enhancing the drone's processing power

(d) Keeping backup copies of flight logs

7. What is a major limitation of drones in delivering mail and parcels? CO1-U

(a) Long battery life (b) Payload capacity

(c) Lack of maneuverability (d) High-altitude flying

8. Drones in the insurance sector help improve claims processing by_____ CO1-U

(a) Reducing the need for physical inspections

(b) Increasing the number of required inspections

(c) Eliminating human assessors

(d) Lowering the cost of insurance premiums

9. What is a major benefit of increasing autonomy in drones? CO1-U

(a) It eliminates the need for regulatory compliance

(b) It allows drones to perform complex tasks with minimal human intervention

(c) It ensures that drones always operate within a visual line of sight

(d) It decreases the overall cost of drone production

10. What is a challenge associated with using drones in swarms? CO1-U

(a) Decreased communication efficiency

(b) Increased regulatory approvals

(c) Managing and coordinating multiple drones simultaneously

(d) Higher battery consumption

PART – B (5 x 2= 10 Marks)

11. Define the basic working principle of drone? CO1-U

12. How do energy sources impact drone performance? CO1-U

13. Name two types of sensors commonly found on a drone and their functions. CO1-U

14. Mention the considerations are important when selecting a drone for agricultural use CO1-U

15. List two safety risks associated with flying drones. CO1-U

PART – C (5 x 16= 80 Marks)

16. (a) Discuss the impact of drone technology on businesses, providing examples of how drones have transformed specific industries. CO1-App (16)

Or

(b) Analyze the entrepreneurial opportunities created by drone technology and evaluate how these opportunities have influenced employability in the market. CO1-App (16)

17. (a) Compare and contrast the autonomy levels of different drones. CO2-Ana (16)

Or

(b) Categorize the steps involved in assembly of drone and its configuration. Explain how each part contributes to the overall functionality and stability of the drone. CO2-Ana (16)

18. (a) Describe the steps involved in operating a small drone in a controlled environment. What safety measures and management tools are essential during operation? CO3-U (16)

Or

(b) Explain how linked mobile devices and applications are used in drone control and operation. How do they contribute to real-time flight management and data processing? CO3-U (16)

19. (a) Analyze the role of drones in the agriculture sector. How do drones improve crop monitoring, pesticide spraying, and overall farm management? CO4-Ana (16)

Or

(b) Analyze the impact of drones in the insurance sector, particularly in assessing damages after natural disasters. How do drones streamline the insurance claims process? CO4-Ana (16)

20. (a) Explain the use of drones in swarms. How do swarms of drones coordinate their activities, and what are the potential applications of this technology? Discuss the increasing autonomy of drones by addressing the aspects of it. CO5-U (16)

Or

(b) Explain the significance of drone miniaturization for future technological advancements. How does miniaturization contribute to expanding drone applications? CO5-U (16)