23AEOE413

MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi
Accredited by NAAC with A+ Grade & ISO 9001:2015 Certified Institution

Model Question Paper

Seventh Semester BE Degree Examination

Micro Aerial Vehicles

Time: 3 Hours (180 Minutes) **Max. Marks: 100**

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

		Module -1	M	L	C
Q1	a.	Describe the motivation behind the development of Micro Aerial Vehicles with reference to mission requirements and their historical evolution.	10	L2	CO1
	b.	Explain the progression from radio-controlled model airplanes to modern Micro Aerial Vehicles.	10	L2	CO1
		OR			
Q2	a.	Describe the characteristics and applications of micro aerial vehicles.	10	L2	CO1
	b.	Explain the role of radio-controlled model airplanes in the development of Micro Aerial Vehicles.	10	L2	CO1
		Module- 2			
Q3	a.	Explain the aerodynamic characteristics of rigid wings used in Micro Aerial Vehicles and their influence on MAV performance.	10	L2	CO2
	b.	Describe the role, constraints, and design considerations of propulsion systems used in Micro Aerial Vehicles.	10	L2	CO2
		OR			
Q4	a.	Explain the experimental and numerical approaches used in Micro Aerial Vehicle (MAV) design.	10	L2	CO2
	b.	Describe the characteristics of flexible and adaptive wings used in Micro Aerial Vehicles.	10	L2	CO2
		Module - 3			
Q5	a.	Describe the architecture and functions of the flight-control system used in micro aerial vehicles, with reference to autopilot integration.	10	L2	CO3
	b.	Explain the stability and control design concepts used in Micro Aerial Vehicles during flight testing.	10	L2	CO3
		OR			
Q6	a.	Describe the design specifications of Micro Aerial Vehicles.	10	L2	CO3
	b.	Explain the procedures involved in flight testing of Micro Aerial Vehicles.	10	L2	CO3
		Module - 4			
Q7	a.	Explain the aerodynamic characteristics of low-aspect-ratio rigid wings and their effect on the lift-to-drag performance of Micro Aerial Vehicles.	5	L2	CO2
	b.	Apply rigid-wing MAV design principles to the configuration development of the Micro Tactical Expendable (MITE).	7	L3	CO4
	c.	Apply rigid-wing MAV design concepts to the system-level development of the NRL and DARPA Micro Air Vehicle programs.	8	L3	CO4
		OR			

Q8	a.	Explain the experimental and numerical approaches used in Micro Aerial Vehicle design.	5	L2	CO2
	b.	Apply rigid-wing MAV design principles to the stability and flight control characteristics of Micro Aerial Vehicles.	7	L3	CO4
	c.	Apply MAV flight-testing principles to the flight experimentation and design evolution of rigid-wing Micro Aerial Vehicles.	8	L3	CO4
Module - 5					
Q9	a.	Explain the flight-control system architecture used for autopilot integration in Micro Aerial Vehicles.	5	L2	CO3
	b.	Apply flexible-wing MAV design principles to the aerodynamic performance of Micro Aerial Vehicles.	7	L3	CO5
	c.	Apply adaptive-wing MAV design methodologies to the stability and control characteristics of Micro Aerial Vehicles.	8	L3	CO5
OR					
Q10	a.	Explain the stability and control design concepts used in Micro Aerial Vehicles during flight testing.	5	L2	CO3
	b.	Apply flexible-wing MAV design concepts to the configuration and operational characteristics of Micro Aerial Vehicles.	7	L3	CO5
	c.	Apply flight-testing principles to the operational development of flexible-wing Micro Aerial Vehicles.	8	L3	CO5

-*****-