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Fifth Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025 Unmanned Aerial Vehicles – Basics and Applications

Time: 3 hrs.

Max. Marks: 100

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

Module – 1			M	L	C
Q.1	a.	Describe the classes of UAV system. Using suitable examples. Explain the classes based on size.	10	L1	CO2
	b.	With a neat sketch and describe generic UAV systems.	10	L2	CO3
OR					
Q.2	a.	Outline the different missions of UAV.	10	L2	CO1
	b.	Classify and explain about the history of aviation.	10	L3	CO2
Module – 2					
Q.3	a.	Derive the range of a propeller driven aircraft and endurance for the jet propelled aircraft.	10	L2	CO3
	b.	List the types of drag of an aircraft and explain any two in brief.	10	L2	CO3
OR					
Q.4	a.	Discuss the concept of boundary layer and how it affects the performance of UAV.	10	L2	CO3
	b.	Demonstrate and explain the three types of vortices occurring in finite wing.	10	L2	CO3
Module – 3					
Q.5	a.	Explain the three types of control system with respect to axis.	10	L1	CO2
	b.	Differentiate and explain about longitudinal stability and lateral stability.	10	L2	CO2
OR					
Q.6	a.	With a neat sketch explain the static stabilities and dynamic stability.	10	L2	CO3
	b.	Construct the block diagram of the flight control system.	10	L2	CO3
Module – 4					
Q.7	a.	Explain the composite structures used in UAV and explain their manufacturing techniques.	10	L2	CO3
	b.	Draw and explain about the V – N diagram with boundaries.	10	L2	CO3
OR					
Q.8	a.	With a neat sketch explain the sandwich construction of panel used in UAV.	10	L2	CO3
	b.	Derive the equation for thrust generated and power required.	10	L2	CO2
Module – 5					
Q.9	a.	Examine the Weapon payload and other payloads.	10	L2	CO3
	b.	Assess the data link functions and attributes.	10	L3	CO3
OR					
Q.10	a.	Plan and explain the step by step procedure of air vehicle and payload control in mission planning.	10	L3	CO3
	b.	Survey about the launch and recovery tradeoffs in the mission planning and control.	10	L2	CO3