Register Number:……..

KUMARAGURU
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B.E/B.TECH DEGREE EXAMINATIONS: NOV / DEC 2024

(Regulation 2018)

Fourth Semester

AERONAUTICAL ENGINEERING

U18AET4004: UAV System Design

COURSE OUTCOMES

CO1: Discuss the configuration, performance parameters, and design aspects of unmanned aerial vehicle (UAV).
CO2: Compare the sensors, payloads and actuators suitable for various UAVs.
CO3: Explain the working of UAV propulsion systems.
CO4: Discuss the communication and navigation systems in UAV.
CO5: Explain the practical limitations in the design and development of an UAV.

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions: -
PART A (10 x 2 = 20 Marks)
(Answer not more than 40 words)

1.	Define UAV with its needs.	CO1	[K_1]
2.	Name some of the factors involved in the selection of the airframe.	CO1	[K_1]
3.	Compare position sensor with altitude sensor.	CO2	[K_2]
4.	Label the types of payloads used in UAV.	CO2	[K_1]
5.	Tell two types of electric motors commonly used for UAVs.	CO3	[K_1]
6.	Recall about the basic principle of solar cell.	CO3	[K_1]
7.	How PID controller used in UAV?	CO4	[K_2]
8.	Show the importance of inertial navigation system.	CO4	[K_2]
9.	List the memory system used in UAV.	CO5	[K_1]
10.	Relate waypoint with route.	CO5	[K_1]

Answer any FIVE Questions: -
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

11.	a)	Summarize the history of UAV.	CO1	[K_2]
	b)	Illustrate about the different aspects of UAV airframe design.	CO1	[K_2]
12.	a)	Extend the architecture and explain in detail about autopilot system.	CO2	[K_2]

	b)	Demonstrate in detail about various sensors system used in an unmanned aerial vehicle.	CO2	[K_2]
13.	a)	Construct the payload types of UAVs.	CO2	[K_3]
	b)	Briefly explain about Radar Imaging payloads.	CO2	[K_3]
14.	a)	Survey about gas turbine engine.	CO3	[K_4]
	b)	Examine the Batteries of UAV.	CO3	[K_4]
15.	a)	Infer in detail about PID control system.	CO4	[K_2]
	b)	Extend about radio frequency and communication devices used in UAV.	CO4	[K_2]
16.	a)	Discover in detail about waypoint navigation for an unmanned aerial vehicle.	CO5	[K_4]
	b)	Examine in detail about telemetry and tracking system.	CO5	[K_4]

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