



End Semester Examination – Nov/Dec – 2016

Code : **15AE3008**
Sub. Name : **Unmanned Aircraft Systems**

Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	The smallest avionics suite, which also incorporates all subsystems functions, weighs 0.02kg, lighting weight 0.09 Kg. The structural mass fraction is 0.2, the battery energy storage mass fraction is 0.2, and the electric motor and propeller mass fraction is 0.1. Except for the payload, all weights are fully accounted for within these parameters. What is the maximum payload capacity of the UAV?	CO2	10
	b.	Briefly explain the Applications for UAV.	CO1	10
(OR)				
2.	a.	Briefly explain classifications of UAV.	CO1	15
	b.	Find the Mean chord, Aspect ratio and taper ration of wing shown in below.		5
3.	a.	Briefly explain types of Hardware accelerator.	CO1	15
	b.	Explain communication unit in UAV.	CO1	5
	c.	Explain LIDAR	CO1	5
(OR)				
4.	a.	Drive the turning radius equation with figure for both wind and absence of wind conditions.	CO2	10
	b.	Write down the kinematic equation relating to position and velocity	CO2	10
5.		Briefly explain the Payload types of unmanned aircraft system. List out the necessary payload requirement for UAV used for agriculture.	CO2	20
(OR)				
6.		Discuss the different types of Power Sources for Unmanned Aircraft Applications.	CO1	20
7.		Design the high altitude mini UAV having 400 grams overall weight, velocity 15 m/s at 4000m altitude. Discuss size, aerofoil section, wing design and tail design.	CO2	20

(OR)				
8.		Briefly explain roles of UAV in Naval and Army.	CO1	20
<u>Compulsory:</u>				
9.		Discuss the future prospects and challenges of UAV.	CO1	20

ALL THE BEST