

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016**Code : 14AE2027****Sub. Name : NAVIGATION, GUIDANCE & CONTROL****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.	Explain the following terms i. Navigation by pilotage ii. Dead Reckoning iii. ADF & NDB iv. TACAN	1 1 1 1	5 5 5 5
(OR)				
2.	a.	Explain in detail basic VFR navigation techniques.	1	10
	b.	What are the radio navigation types? Explain in detail.	1	10
3.	a.	Explain the two different approach guidance systems in detail.	1	20
(OR)				
4.	a.	The characteristic polynomial of a system of a system is $s^7 + 9s^6 + 24s^5 + 24s^4 + 24s^3 + 24s^2 + 23s + 15 = 0$. Determine the location of roots on s-plane and hence the stability of the system.	2	10
	b.	State the Routh Hurwitz criterion and solve $s^5 + s^4 + 2s^3 + 2s^2 + 3s + 5 = 5$.	2	10
5.	a.	Comment on inertial navigation systems, their sensors and the different co-ordinate frames.	2	20
(OR)				
6.	a.	What are autopilot systems? What are the sensors used? Explain longitudinal, lateral and missile autopilot systems.	2	20
7.	a.	Solve the following with the method root locus and analyse the stability of the system $G(s) = \frac{K}{s(s+4)(s+5)(s^2+2s+1)}$	2	20
(OR)				
8.	a.	How does the interception of missiles with its targets work? Explain the methods by which it is guided.	2	20
<u>Compulsory:</u>				
9.	a.	What are pitch and yaw orientation control systems. Explain in Detail.	2	20

ALL THE BEST