Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER–VIII • EXAMINATION – SUMMER • 2014

Subject Code: 180104 **Date: 27-05-2014**

Subject Name: Aircraft Control & Navigation

Time: 10:30 am - 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain transient response of an aircraft.	**07**
	(b)	Mention the assumptions made while deriving equations of motion for aircraft.	**07**
Q.2	**(a)**	What do you understand by flight path stabilization? Briefly explain how it is achieved.	**07**
	(b)	Explain Euler angle system to establish relations between Inertial and Body reference.	**07**
		OR	
	(b)	With the help of a suitable block diagram explain yaw orientation control.	**07**
Q.3	**(a)**	Write short notes on (any two) : (i) Cross coupling (ii) Dutch Roll (iii) Duplex system of aircraft control	**07**
	(b)	With the help of suitable example explain the effect of high roll rate on stability of aircraft.	**07**
		OR	
Q.3	**(a)**	Analyze the response characteristics of Step input and Ramp input.	**07**
	(b)	Explain acceleration control system.	**07**
Q.4	**(a)**	With the help of response diagrams explain Inner loop and Outer loop system.	**07**
	(b)	What do you understand by aircraft navigation system? Explain with examples.	**07**
		OR	
Q.4	**(a)**	Write short note on (any two) : (i) Terrain matching navigation (ii) Hyperbolic navigation (iii) Celestial navigation	**07**
	(b)	Describe auto pilot system with suitable block diagram.	**07**
Q.5	**(a)**	Explain the principle of navigation of an aircraft. Also mention the modern navigations systems presently in use.	**07**
	(b)	What do you understand by Down wash?	**07**
		OR	
Q.5	**(a)**	Write short notes on (any two) (i) Surveillance (ii) Glide path coupler (iii) Reconnaissance	**07**
	(b)	Explain satellite navigation system. Comment on the feasibility of using GPS for aircraft navigation during war time by India.	**07**

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