Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3170108 Date:22-11-2024

Subject Name: Aircraft Control and Navigation

Time:10:30 AM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Draw Basic three-axis Autopilot system in with suitable diagram.	**03**
	(b)	Shortly explain phugoid mode.	**04**
	(c)	Explain Longitudinal Transfer Function for Elevator displacement.	**07**
Q.2	**(a)**	Define (i) Stability (ii) Navigation (iii) Dutch Roll.	**03**
	(b)	Draw Lateral Autopilot with block diagram.	**04**
	(c)	Explain Pitch Orientation control system with Functional diagram.	**07**
		OR	
	(c)	Explain ILS/MLS coupled Autopilot system in brief.	**07**
Q.3	**(a)**	Explain Transient Response of an Aircraft.	**03**
	(b)	Write a note on Glide slop coupler.	**04**
	(c)	Derive equation for Turn Compensation with suitable sketch.	**07**
		OR	
Q.3	**(a)**	Draw Dutch roll Damping with block diagram.	**03**
	(b)	Explain Principle and application of Autopilot System.	**04**
	(c)	Derive equation of Angular motion for an Aircraft.	**07**
Q.4	**(a)**	Enlist Celestial navigation system.	**03**
	(b)	Explain Acceleration control system with suitable block diagram.	**04**
	(c)	Explain Flight Management system in brief with respect of Autopilot.	**07**
		OR	
Q.4	**(a)**	Which are the aircraft parameters affect the stability?	**03**
	(b)	Explain Acceleration control system of an aircraft.	**04**
	(c)	Find out Aircraft's attitude with respect to earth by Euler's angle method.	**07**
Q.5	**(a)**	Write a short note on Deck reckoning.	**03**
	(b)	Explain gyro system for controlling cross coupling condition of Aircraft.	**04**
	(c)	Explain relation between Automatic fuel control system and throttle setting	**07**
		OR	
Q.5	**(a)**	Explain Positioning in terms of navigation.	**03**
	(b)	Define LORAN, DECCA, OMEGA navigation system.	**04**
	(c)	Explain Height and Throttle control system with block diagram.	**07**

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