Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3170108 Date:18-01-2023

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)**	Define (i) Stability (ii) Navigation (iii) Dutch Roll	**03**
	(b)	Explain longitudinal Autopilot with block diagram.	**04**
	(c)	Explain Pitch Orientation control system with Functional diagram.	**07**
Q.2	**(a)**	Draw a block diagram of basic autopilot	**03**
	(b)	Explain Lateral Autopilot with block diagram.	**04**
	(c)	Explain ILS/MLS coupled Autopilot system in brief.	**07**
		OR	
	(c)	Explain Yaw Orientation control system with Block diagram.	**07**
Q.3	**(a)**	Enlist Celestial navigation system .	**03**
	(b)	Explain Acceleration control system with suitable block diagram.	**04**
	(c)	Derive equation of Angular motion for an Aircraft.	**07**
		OR	
Q.3	**(a)**	Write a short note on Deck reckoning.	**03**
	(b)	Derive equation for Turn Compensation with suitable sketch.	**04**
	(c)	Explain Inertial cross coupling in brief.	**07**
Q.4	**(a)**	Write a note on Glide slop coupler.	**03**
	(b)	Explain Principle and application of Autopilot System in brief.	**04**
	(c)	Explain Transient Response of an Aircraft.	**07**
		OR	
Q.4	**(a)**	List out the parameters which are affecting stability of an aircraft.	**03**
	(b)	Explain Dead reckoning in brief.	**04**
	(c)	Explain Flight Management system in brief	**07**
Q.5	**(a)**	Explain GPS based navigation.	**03**
	(b)	Explain Positioning in terms of navigation.	**04**
	(c)	Find out Aircraft's attitude with respect to earth by Euler's angle method.	**07**
		OR	
Q.5	**(a)**	Explain Dutch roll Damping with block diagram.	**03**
	(b)	Write a note on Mapping Navigation system.	**04**
	(c)	Derive an equation of linear motion for aircraft.	**07**

****