Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:3170108 Date:16/06/2022

Subject Name:Aircraft Control and Navigation

Time:02:30 PM TO 05:00 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)**	Why control and Navigation systems are necessary for aircraft.	**03**
	(b)	Explain Principle and application of Autopilot System in brief.	**04**
	(c)	Explain Transient Response of an Aircraft.	**07**
Q.2	**(a)**	Write a short note on surveillance.	**03**
	(b)	Write short note on dutch roll.	**04**
	(c)	Explain Altitude and Mach hold Control system with suitable block diagram.	**07**
		OR	
	(c)	Explain Euler angle system to establish relations between Inertial and Body reference	**07**
Q.3	**(a)**	Explain longitudinal Autopilot with block diagram.	**03**
	(b)	Write a short note on Deck reckoning.	**04**
	(c)	Explain yaw orientation control system with Block diagram.	**07**
		OR	
Q.3	**(a)**	Enlist Celestial navigation system.	**03**
	(b)	Explain Lateral Autopilot with block diagram.	**04**
	(c)	Explain Automatic Flare out and Approach system.	**07**
Q.4	**(a)**	What is effect of high roll rate on aircraft's stability?	**03**
	(b)	Enumerate Flight Management system in brief	**04**
	(c)	Explain Acceleration control system with suitable block diagram.	**07**
		OR	
Q.4	**(a)**	List out the parameters which are affecting stability of an aircraft.	**03**
	(b)	Explain the assumptions which are made to derive an equation of motion of Aircraft.	**04**
	(c)	Explain ILS/MLS coupled Autopilot system in brief.	**07**
Q.5	**(a)**	What is long period mode?	**03**
	(b)	How does automatic fuel system control work?	**04**
	(c)	Define Inertial cross coupling. Explain the system for controlling an aircraft subject to Inertial cross coupling	**07**
		OR	
Q.5	**(a)**	What is short period mode?	**03**
	(b)	Define very high frequency omni-directional range.	**04**
	(c)	Explain Radio wave propagation and noise characteristics of signal in brief.	**07**