

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2018

Subject Code: 2180104

Date: 02/05/2018

Subject Name: Aircraft Control and Navigation(Department Elective III)

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.

		MARKS
Q.1	(a) Write a short note on Inertial cross coupling.	03
	(b) Explain Displacement autopilot with block diagram.	04
	(c) Derive an Equation of Angular motion of an Aircraft.	07
Q.2	(a) Write Short note on Dutch roll.	03
	(b) Explain Basic 3-axis Autopilot system in with suitable diagram.	04
	(c) Explain Altitude and Mach hold Control system with suitable block diagram.	07
OR		
Q.3	(c) Explain Transient Response of an Aircraft.	07
	(a) Write a Short note on surveillance.	03
	(b) Explain Dead Reckoning in brief.	04
	(c) Explain ILS/MLS coupled autopilot system in brief.	07
OR		
Q.3	(a) Explain Duplex Control System with block diagram.	03
	(b) Explain the assumptions which are made to derive an equation of motion of Aircraft.	04
	(c) Explain Yaw Orientation Control system with suitable block diagram.	07
Q.4	(a) Write a short note on Celestial navigation system.	03
	(b) Explain Inner loop and outer loop control system with block diagram.	04
	(c) Derive Linear equation of motion for Aircraft.	07
OR		
Q.4	(a) Explain effect of high roll rate on aircraft's stability.	03
	(b) Explain Lateral Autopilot system with suitable block diagram.	04
	(c) Define Navigation. Explain categories of navigation in brief.	07
Q.5	(a) Write a short note on Glide Slope Coupler.	03
	(b) Derive equation for Turn Compensation with suitable sketch.	04
	(c) Explain Terrestrial Radio Navigation System in brief.	07
OR		
Q.5	(a) Explain why control and Navigation systems are necessary for aircraft.	03
	(b) Explain Acceleration Control System with block diagram.	04
	(c) Explain Euler angle system to establish relations between Inertial and Body reference.	07