

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2180104****Date: 06/05/2017****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.

- Q.1** (a) Explain pitch orientation control system with block diagram. **07**
(b) Define Navigation. Explain types of navigation in brief. **07**
- Q.2** (a) What do you mean by inner loop control system and outer loop control system? Explain with block diagram. **07**
(b) Explain longitudinal autopilot with its advantages and disadvantages in brief. **07**
- OR**
- (b) Derive an equation for linear motion of an aircraft. **07**
- Q.3** (a) Explain Transient response of an aircraft in brief. **07**
(b) Explain Duplex system of an aircraft control with suitable block diagram. **07**
- OR**
- Q.3** (a) Explain Yaw orientation control system with block diagram. **07**
(b) Explain Acceleration control system with its block diagram. **07**
- Q.4** (a) Derive an equation of angular motion of an aircraft. **07**
(b) Explain Autopilot system with block diagram. **07**
- OR**
- Q.4** (a) Explain Euler angle system to establish relations between Inertial and Body reference. **07**
(b) Define Inertial cross coupling. Explain the system for controlling an aircraft subject to Inertial cross coupling. **07**
- Q.5** (a) Derive an equation for Turn compensation **07**
(b) With the help of suitable example explain the effect of high roll rate on stability of aircraft. **07**
- OR**
- Q.5** (a) Explain satellite radio navigation system in brief with suitable sketch. **07**
(b) Explain Radio wave propagation and noise characteristics of signal in brief. **07**
