

GUJARAT TECHNOLOGICAL UNIVERSITY
BE – SEMESTER–VIII • EXAMINATION – SUMMER • 2014

Subject Code: 180104**Date: 27-05-2014****Subject Name: Aircraft Control & Navigation****Time: 10:30 am - 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 transient response of an aircraft. **07**
 (b) Mention the assumptions made while deriving equations of motion for aircraft. **07**
- Q.2** (a) What do you understand by flight path stabilization? Briefly explain how it is achieved. **07**
 (b) Explain Euler angle system to establish relations between Inertial and Body reference. **07**
- OR**
- (b) With the help of a suitable block diagram explain yaw orientation control. **07**
- Q.3** (a) Write short notes on (any two) : **07**
 (i) Cross coupling
 (ii) Dutch Roll
 (iii) Duplex system of aircraft control
 (b) With the help of suitable example explain the effect of high roll rate on stability of aircraft. **07**
- OR**
- Q.3** (a) Analyze the response characteristics of Step input and Ramp input. **07**
 (b) Explain acceleration control system. **07**
- Q.4** (a) With the help of response diagrams explain Inner loop and Outer loop system. **07**
 (b) What do you understand by aircraft navigation system? Explain with examples. **07**
- OR**
- Q.4** (a) Write short note on (any two) : **07**
 (i) Terrain matching navigation
 (ii) Hyperbolic navigation
 (iii) Celestial navigation
 (b) Describe auto pilot system with suitable block diagram. **07**
- Q.5** (a) Explain the principle of navigation of an aircraft. Also mention the modern navigations systems presently in use. **07**
 (b) What do you understand by Down wash? **07**
- OR**
- Q.5** (a) Write short notes on (any two) **07**
 (i) Surveillance
 (ii) Glide path coupler
 (iii) Reconnaissance
 (b) Explain satellite navigation system. Comment on the feasibility of using GPS for aircraft navigation during war time by India. **07**
