Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

VI SEMESTER B.TECH. (OE-II AERONAUTICAL ENGINEERING)

END SEMESTER EXAMINATIONS, MAY 2017

SUBJECT: INTRODUCTION TO AVIONICS AND NAVIGATION SYSTEMS [AAE 3282]

REVISED CREDIT SYSTEM
(03/05/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. What is TCAS? **(02)**

1B. Explain the types of GNSS-INS integration scheme? **(03)**

1C. What is lateral motion of aircraft? Explain all the lateral motion derivatives of aircraft with neat diagram? **(05)**

2A. Define the navigation, guidance and control in the aircraft with a single neat diagram? **(02)**

2B. What are the avionics environmental requirements? Explain in the context of temperature, vibration, EMC, lightening & EMP. **(03)**

2C. What is FMS? What are the factors lead to install the FMS in an aircraft? Also discuss the task carried out. **(05)**

3A. Sketch the diagram of MIL-STD-1553B data bus word formats. **(02)**

3B. What are the ADF components? Briefly explain ADF components with neat diagrams. **(03)**

3C. What is air data system? Draw the block diagram of digital-air data computer and explain its functionalities. **(05)**

4A. What are the informations displayed on PFD from AHRS? **(02)**

4B. What is FBW? Draw the diagrams and explain the following: Safety and integrity, quadruplex system configuration, redundancy configuration, voting and consolidation in the FBW. **(05)**

4C. Briefly explain the ARINC-429 databus topology and protocols. **(03)**

5A. What are the basic differences between IMU and INS? **(02)**

5B. Explain the ILS Glideslope and Localizer functions of ILS with neat diagrams. **(03)**

5C. What is holographic HUD? Draw the off-axis holographic combiner HUD configuration and explain its functionalities. **(05)**