Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

VII SEMESTER B.TECH. (AERONAUTICAL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV 2018

SUBJECT: AVIONICS AND NAVIGATION SYSTEM [AAE 4103]

REVISED CREDIT SYSTEM
(27/11/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. What is the synthetic vision system for aircraft and why's it important? **[03]**

1B. Describe the 3D weather radar called 'IntuVue'. Explain the working principle of it. **[03]**

1C. Explain the block diagram of Boeing B-757 flight management system and explain its function and requirements. **[04]**

2A. What is an automatic flight control system? Explain the automatic flight control system for flare, glideslope and localizer control with neat diagram. **[04]**

2B. How it is possible to keep an alternator at a constant speed when the engine by which it is driven changes rpm? **[03]**

2C. Explain the military standard data bus protocol. **[03]**

3A. How do you achieve the bearing of the aircraft with the help of VOR signal? **[02]**

3B. Explain the typical airfield layout for ILS equipment with neat diagram? How it is different than MLS? **[04]**

3C. Explain the trilateration approach for positioning of aircraft using satellites navigation. **[04]**

4A. Draw the block diagram of DME transponder and briefly explain the working of each subsystem/components. **[04]**

4B. List the two LRM available in modern aircraft and their importance. **[02]**

4C. Derive the Kalman filter equation for GNSS-INS integration scheme. Sketch the flow chart of algorithm. **[04]**

5A. Compare the pneumatic and electropneumatic air data system with neat diagram. **[04]**

5B. Explain the lane processing task and quadruplex system architecture in fly by wire flight control system with neat diagram. **[03]**

5C. What is modern approach in the aircraft to project outside world scene and cockpit instrument information's both same time to the pilot's eye. Sketch and explain it. **[03]**