Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

VII SEMESTER B.TECH (AERONAUTICAL ENGINEERING)

END SEMESTER EXAMINATIONS, DEC.2015/JAN 2016

SUBJECT: AIRCRAFT SYSTEMS AND INSTRUMENTS [AAE 403]

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ANY FIVE FULL** the questions.
- Missing data may be suitable assumed.

1A	Write short notes on engine control interfaces.	**(2)**
1B	With the help of line diagram explain air flow control system.	**(3)**
1C	Explain aircraft engine ignition control system with neat sketch.	**(5)**
2A	Write short notes on the basic properties of aircraft fuels.	**(2)**
2B	What is collector tank? Explain briefly.	**(3)**
2C	Explain about aircraft fuel tank safety.	**(5)**
3A	Write short notes on reservoir functions and operation.	**(2)**
3B	What are the functions of piston pump? Explain briefly.	**(3)**
3C	Select any aircraft engine and prepare a case study. It should cover (i) Working Principle (ii) Components and its functions (iii) Advantages and limitations of the engine (iv) Challenges and Problems (v) Future scope.	**(5)**
4A	Define the two fundamental properties of a mechanical gyroscope. Also discuss the parameters on which they depend.	**(3)**
4B	Describe briefly about the following: (i) The mechanical gyroscope (ii) Vibrating gyros (iii) Ring laser gyros, and (iv) Fibre optic gyros	**(4)**
4C	Derive Ring Laser Gyro equation.	**(3)**
5A	Explain hydro mechanical torque meter with the help of a diagram.	**(3)**

5B Describe with the help of a diagram the operating principle and construction of an airborne vibration monitoring system using piezoelectric crystal. **(4)**

5C How does a compensating probe compensate for changes in fuel's dielectric constant? Draw the sketch of a compensating probe along with the main probe. **(3)**

6A Explain briefly the vapour cycle cooling system. **(3)**

6B Explain the operating principle of a radio altimeter with proper diagram. **(4)**

6C Explain Ram powered reverse bootstrap refrigeration system. **(3)**