Reg. No.										

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)

VII SEMESTER B.TECH (AERONAUTICAL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

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	List the factors that influence engine installation.	**(2)**
1B	With the help of line diagram explain the working principle of aircraft fuel flow control system.	**(3)**
1C	Explain the various aircraft engine control system parameters.	**(5)**
2A	Write short notes on types of fuel used in aviation.	**(2)**
2B	What is bladder tank? Explain briefly.	**(3)**
2C	Explain the working principle of boost pump and motive flow pump with neat diagrams.	**(5)**
3A	Explain the devices used in aircraft hydraulic systems.	**(2)**
3B	What are the functions of gear pump? Explain briefly.	**(3)**
3C	Select any aircraft, oil filter or air filter and prepare a case study. It should cover (i) Types (ii) (ii) Advantages (iii) Limitations (iv) Present Challenges if any (v) Recommended service techniques	**(5)**
4A	Explain how and where the precession force acts on a spinning rotor, in response to an applied force?	**(3)**
4B	Describe the various methods of driving the gyroscope.	**(4)**
4C	What is meant by erection in a gyroscope? Describe torque motor erection system with the help of a diagram.	**(3)**
5A	Describe with an appropriate diagram the operation of shaft-speed measurement using a tachometer.	**(3)**

5B How does an electromagnetic vibration pickup work? Discuss with the help of a block schematic diagram, the construction and operation of a dedicated vibration monitoring system using an electromagnetic pickup. **(4)**

5C What are the two methods of Fuel Quantity measurement? Explain their basic principles and the relative merits and demerits? **(3)**

6A Explain aircraft icing .What are the various definitions given for aircraft icing based on the intensity? Also explain de-ice systems. **(3)**

6B Explain with a block diagram of a typical AWACS system. **(4)**

6C Explain Ram air cooling system. **(3)**