# BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING) B.TECH. (AEROSPACE ENGINEERING) (BTAE)

Term-End Examination

June, 2013

## BME-006 : MECHATRONICS

*Time : 3 hours*                    *Maximum Marks : 70*

**Note :**   *Answer **any seven** questions. All questions carry **equal** marks.*

1.  (a)   Explain the operation of Lever Type and      5
          Push Type mechanical Switches.

    (b)   Describe the working of a rotary      5
          potentiometer.

2.  Explain the functioning of the following :      5+5

    (a)   Thermocouple

    (b)   Hysteresis in a device.

3.  What is the principle of operation of an Optical      10
    Encoder ?  Explain with the help of a suitable
    diagram.

4. (a) Describe the working of an Axial Pump    6
       along with diagram.

   (b) What is a restriction check valve ?    4

5. Describe the working of a hydraulic power pack    10
   with the help of a suitable diagram.

6. Explain the operation of the following :    5+5
   (a) Pressure Reducing Valves
   (b) Hydraulic Cylinder (Actuator)

7. How do the following systems work ? Explain    5+5
   the following with the help of block diagrams.
   (a) Open Loop Control System
   (b) Closed Loop Control System

8. (a) Describe the functioning of a relay with    5
       schematic diagram.

   (b) Explain the principle of a stepping motor    5
       along with a diagram.

9. Describe the Watt's - Fly Ball Governor with the    10
   help of a block diagram.

10. Write short notes on *any two* :    5+5
    (a) RAM and ROM
    (b) Microprocessor and Controller
    (c) Fleming's Left Hand Rule