00807

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2011

BME-006 : MECHATRONICS

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** of the following questions. Use of **calculator** is allowed.*

1. Briefly explain the principle of operation of **10** photoelectric sensors and fluid flow switch with neat diagrams.

2. (a) Describe the working of any Cam - Controlled System. **5+5=10**
    (b) Describe how hydraulic system can be used to amplify force.

3. (a) Write a short note on the methods for range sensing. **5+5=10**
    (b) What are the major guidelines for the selection of a sensor ?

4. Describe the working of the following pumps with diagrams. **10**

    (a)   Gear Pump   (b)   Vane Pump

5. Describe the various types of check valves used in hydraulic and pneumatic systems. **10**

6. Describe the following : **10**

    (a)   Amplifier   (b)   Intensifier

7. Describe various methods of speed control of a DC motor. **10**

8. (a) What is the binary equivalent of hex 74F4 ? Convert that binary number into equivalent decimal and octal numbers. **5+5=10**

    (b) What is GRAFCET ? What are the advantages of GRAFCET over ladder logic ?

9. (a) Describe the basic operation of a Proportional - Integral - Derivative (PID) control loop with block diagram. **5+5=10**

    (b) What is inverse kinematics ? Discuss the importance of path planning.

10. Write short notes on *any two* of the following :

    (a) Thermistor   **5+5=10**

    (b) Pilot operated check valve

    (c) Stepping Motors

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