

01673

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

**Term-End Examination**

**December, 2012**

**BME-006 : MECHATRONICS**

*Time : 3 hours*

*Maximum Marks : 70*

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

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1. (a) Differentiate between active and passive sensors. What are the requirements for selecting a sensor ? 6
  - (b) Describe the components of a continuous sensing system. 4
  
  2. Briefly explain the functioning of the following : 5+5
    - (a) Generator
    - (b) Thermistor
  
  3. Explain the principle of operation of an Ultrasonic Range sensor with the help of a neat diagram. 10

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|-----|-----|--|-----|
| 4.  | (a) | What are the advantages and limitations of hydraulic systems over other systems ?                  | 6   |
|     | (b) | Explain the working of Wrist Sensors ?   | 4   |
| 5.  | (a) | Describe the working of a Centrifugal Pump with the help of a diagram.                             | 5   |
|     | (b) | What is an Inline Check Valve ? Explain its functioning with the help of a diagram.                | 5   |
| 6.  |     | Describe the working of a compressor along with a diagram, clearly indicating the auxiliary units. | 10  |
| 7.  | (a) | Explain the functioning of a Servo Motor with the help of a diagram.                               | 5   |
|     | (b) | Describe armature speed control of a DC motor.   | 5   |
| 8.  | (a) | What is Advanced PLC Programming ?   | 5   |
|     | (b) | Describe the different types of Electrical Contacts with suitable examples.                        | 5   |
| 9.  |     | Describe the architecture of a PLC with a suitable diagram.  | 10  |
| 10. |     | Write short notes on <i>any two</i> :  | 5+5 |
|     | (a) | Actuators and Switches   |     |
|     | (b) | PID Controller   |     |
|     | (c) | Timers.  |     |
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