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

Term-End Examination

December, 2011

BME-006 : MECHATRONICS

Time : 3 hours

Maximum Marks : 70

*Note : Use of scientific calculator is allowed. Question
No. 1 is compulsory. Answer any six out of
remaining.*

1. (a) What is a sensor ? Explain about active and passive sensors. Also list out the basic requirements of sensors. **5+5**
- (b) How do you classify transducers ? Describe the working of any one transducer. Also list out some industrial applications.
2. (a) What is a proximity switch ? Describe in detail, all its industrial applications. **5+5**
- (b) Describe four different sensing modes for photoelectric sensors.

3. (a) Describe the working of wrist sensors. Also 5+5
explain its applications.
- (b) Describe the important guidelines for the
selection of a sensor.
4. (a) What is a transfer system ? What are its 5+5
uses ? Explain the methods, advantages and
disadvantages of transfer system.
- (b) Describe the mechanism of Cam. Also
describe the application and working of
Cam-Controlled system.
5. (a) Describe the working principle of hydraulic 5+5
pumps and its types.
- (b) What is a compressor ? What are the
various methods by which the efficiency of
a reciprocating compressor can be
improved ? Explain.
6. (a) Describe the basic principles of stepper 5+5
motors and servo motors.
- (b) Draw block diagram of a digital control
system. Explain, how digital control system
is different from analog control system ?
7. (a) Explain the working principle of relay with 5+5
the help of a schematic diagram.

- (b) Draw and explain the PLC structure. Also write the advantages of PLC over microcomputer.
8. (a) What are the two types of data transfer techniques used in computer interfacing ? List out the main differences between them. 5+5
- (b) Explain the sequence of operations taking place in an interrupt driven method of data transfer.
9. (a) Define the term process control. Draw and explain the block diagram of process control system. 5+5
- (b) Why is feed back used in process control systems ? Describe the difference between open loop and closed loop control.
10. (a) List the five basic types of PLC timers. What is the purpose of an RTO (Retentive on Delay Timer) ? 5+5
- (b) What are the types of symbols used in GRAFCET programming ?
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