

B.E DEGREE EXAMINATIONS: JUNE/JULY 2013

Seventh Semester

MECHANICAL ENGINEERING

MEC123: Mechatronics

Time: Three Hours

Maximum Marks: 100

**Answer all the Questions:-
PART A (10 x 1 = 10 Marks)**

1. Mention a device which responds to the quantity being measured by giving as its output a signal which is related to the quantity.
 - a) Display system
 - b) Signal conditioner
 - c) Sensor
 - d) Amplifier
2. What is a sensor used on the 'fingertips' of robotic 'hands' to determine when a hand has come into contact with an object.
 - a) Hall effect sensor
 - b) Tactile Sensor
 - c) Proximity switches
 - d) Potentiometer sensor
3. Name the components which are used with hydraulic and pneumatic systems to direct and regulate the fluid flow.
 - a) Cylinders
 - b) Actuators
 - c) Valves
 - d) Filters
4. What is a machine which produces rotation through equal angles?
 - a) D.C. motor
 - b) A.C. motor
 - c) Servo motor
 - d) Stepper motor
5. For which device, the potential difference v across it at any instant depends on the current I through it.
 - a) Resistor
 - b) Inductor
 - c) Capacitor
 - d) Diode
6. With what mode of control the controller output is proportional to the rate of change with time of the error signal.
 - a) Proportional mode
 - b) Derivative mode
 - c) Integral mode
 - d) PI mode
7. What is a ladder logic function which requires no input to Input 1 and Input 2 to obtain an output?
 - a) AND
 - b) OR
 - c) NAND
 - d) NOR
8. What is the number format used at all the internal operations in the CPU of the PLC?
 - a) Decimal
 - b) Binary

23. a) Discuss about electromechanical devices and their calculations.

(OR)

b) Write a detailed note on Digital controllers in a neat sketch.

24. a) Draw the architecture of a PLC and discuss about it.

(OR)

b) Brief about data handling operations carried out with a PLC with neat diagrams.

25. a) What is engine management system? Draw the schematic diagram and explain the functioning of engine management system.

(OR)

b) Explain the basic form of a pick-and-place robot unit with a neat sketch. and also explain the different applications of robot .
