A

Reg. No. :

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. In which system does the output not affect the process in any way?   CO1- R

    (a) Open loop   (b) closed loop   (c) Both (a) and (b)   (d) None of the above

2. Thermistor is a transducer. Its temperature coefficient is   CO1- R

    (a) Negative   (b) Positive   (c) Zero   (d) None of these

3. Which element used to converts hydraulic power into mechanical power.   CO2- R

    (a) compressor   (b) Pump   (c) Actuator   (d) Convertors

4. Directional valves or Check valves allows the flow in_____direction only   CO2- R

    (a) two   (b) three   (c) four   (d) one

5. The force acting on a mechanical body is governed by   CO3- R

    (a) Newton's Second law of motion   (b) Newton's Third law of motion

    (c) Newton's Fourth law of motion   (d) Newton's First law of motion

6. Which one is not the continuous and discrete process controller   CO3- R

    (a) Two step mode   (b) Proportional   (c) Derivative   (d) Feedback controller

7. The PLC is used in _____.   CO4- R

    (a) Machine tools   (b) automated assembly equipment

    (c) moulding and extrusion machines   (d) all of the above

8. --------------- instruction is commonly used to copy the value from one address to another.   CO4- R

   (a) GET   (b) PUT   (c) MOVE   (d) None of the above

9. Which sensor is used in engine management system to measure burne exhaust gas   CO5- R

   (a) Oxygen sensor   (b) temperature sensor

   (c) speed sensor   (d) none of the above

10 Microcomputer is called as   CO5- R

   (a) micro controller   (b) smaller version of a computer

   (c) microprocessor   (d) both (a) & (b)

PART – B (5 x 2= 10 Marks)

11 Give an example for closed loop and open loop system ?   CO1- R

12 Define Gear Train   CO2- R

13 Summarize derivative control mode   CO3- R

14 Draw the ladder diagram for exclusive – OR gate   CO4- R

15 List the four sensors used in Engine Management Systems   CO5- R

PART – C (5 x 16= 80 Marks)

16 (a) Explain ant two types of temperature measurement sensor.   CO1-U   (16)

   Or

   (b) Discuss in detail construction, working principle, advantages,   CO1-U   (16)
       disadvantages of LVDT.

17 (a) List the types of directional control valve and explain in detail CO2-U   (16)

   Or

   (b) Explain the working principle of pneumatic diaphragm actuator.   CO2-U   (16)

18 (a) Explain with neat example of microprocessor based controller   CO3-U   (16)

   Or

   (b) Explain the features of proportional controller, PI controller and CO3-U   (16)
       PID controller

19. (a) Discuss how AND, OR, NOR and NAND systems can be formed with ladder diagram CO4-U (16)

Or

(b) Explain the data handling operations in a PLC using simple programs CO4-U (16)

20. (a) Design a pick and place robot using mechatronics elements and explain the Robot control. CO5-App (16)

Or

(b) Design a vehicle engine management system on the basis of mechatronics System design CO5-App (16)

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