Reg. No. :

Question Paper Code: 47703

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Seventh Semester

Mechanical Engineering

14UME703 - MECHATRONICS

(Regulation 2014)

Duration: One hour   Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The sensors are classified on the basis of

    (a) Functions   (b) Performance   (c) Output   (d) All of the above

2. Inductive proximity sensors can be effective only when the objects are of _____ materials.

    (a) Ferro magnetic   (b) Diamagnetic   (c) Paramagnetic   (d) All of the above

3. The type of drive suitable for high torque application is

    (a) Pneumatic drive   (b) Electric drive   (c) hydraulic drive   (d) Vector drive

4. What is the function of electric actuator?

    (a) Converts electrical energy into mechanical energy

    (b) Converts mechanical torque into electrical energy

    (c) Converts mechanical energy into mechanical torque

    (d)   None of the above

5. Variable speed cannot be obtained with ____.

    (a) DC motors controller   (b) AC motor controller

    (c) resistance, capacitance & inductance   (d) AC & DC controllers

6. _____of PLCs can be done in very little time.

    (a) Programming   (b) Installation

    (c) Commissioning   (d) All of the above

7. PLC operates with _____ voltage.

    (a) 24 DC   (b) 5 VDC   (c) 440 VAC   (d) 240 VAC

8. PLCs are programmed using what language?

    (a) Natural Language such as English   (b) C-language

    (c) Relay-ladder logic   (d) None of the above

9. Engine management system is made up of

    (a) Sensors   (b) Actuators

    (c) Microprocessor   (d) All of the above

10. Sensors detect a_____

    (a) Mechanical condition   (b) Chemical state

    (c) Temperature conditioning   (d) All of the above

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. With neat sketch explain the working principle and applications of the any one Flow Sensors. (8)

12. Explain in detail about various types of stepper motor. (8)

13. Compare the control system performance for a system with proportional control and a system with integral control (8)

14. Explain the basic structures of PLC. Explain in detail about the programming of a PLC. What are the advantages of PLC? (8)

15. Consider two mechatronic products and describe how they are designed using the conventional electro-mechanical product design approach and mechatronic product design approach (8)

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