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6th Sem / Branch : Mechanical Engg.
Sub. : Mechatronics

Time : 3Hrs. M.M. : 100

SECTION-A

Note: Multiple choice questions. All questions are compulsory (10x1=10)

Q.1 Absolute pressure is equal to (CO3)
a) Gauge pressure
b) Atmospheric pressure
c) Sum of A and B
d) Vacuum Pressure

Q.2 How many byes can a typical low-end micro-controller have? (CO6)
a) 100 bytes b) 500 bytes
c) 1000 bytes d) 300 bytes

Q.3 Which among the following applications are not microcontroller bases? (CO7)
a) Computer system b) Washing Machines
c) MP3 Players d) Telephones

Q.4 Which type of coil is a solenoid? (CO9)
a) Electromagnetic b) Electrical
c) Mechanical d) Chemical

Q.5 What does RPM stand for? (CO3)
a) Rotation per minute

b) Revolution per minute
c) Rounds per minute
d) Rotation per millisecond

Q.6 What is the function of a pressure gauge? (CO3)
a) It controls the rate of flow of oil
b) It shows the pressure reading
c) Controls the direction of flow of oil
d) It converts the mechanical energy to hydraulic energy

Q.7 Which factor affects the least while selection of sensor? (CO2)
a) Size b) Accuracy
c) Colour d) Durability

Q.8 Interferometer can be used for accurate measurement of (CO2)
a) Distance b) Time
c) Acceleration d) Velocity

Q.9 which type of device is a stepper motor? (CO5)
a) Electromechanical b) Electrochemical
c) Embedded system d) Electromagnetic

Q.10 What are the applications of PLC in mechatronics? (CO9)
a) Timing, counting, logic, arithmetic and sequencing
b) Managing, commanding and directing
c) Storing data
d) Processing

SECTION-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

Q.11 Define mechatronics. (CO1)

Q.12 Discuss the role of sensors in mechatronics. (CO2)

Q.13 Define transducer. (CO2)

Q.14 Define calibration. (CO5)

Q.15 Define actuation system. (CO5)

Q.16 Write the components of electrical actuation system. (CO5)

Q.17 Write the use of mechanical switches used in actuation system. (CO5)

Q.18 Define microprocessor. (CO7)

Q.19 Discuss shift registers used in PLC. (CO9)

Q.20 Define input and output device. (CO6)

SECTION-C

Note: Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Discuss the working of force sensor with the help of diagram. (CO2)

Q.22 Discuss the working of mechanical switches used in actuation system. (CO5)

Q.23 Discuss the working of serial communication interface. (CO8)

Q.24 Explain programming with the help of ladder diagrams. (CO9)

Q.25 Explain Boolean algebra with help of diagram. (CO3)

Q.26 Discuss the working of control values used in pneumatic and hydraulic systems. (CO5)

Q.27 Explain the working of programmable logic controller. (CO9)

Q.28 How timers and relay plays a significant role in the working of PLC. (CO9)

Q.29 How data handling is done in PLC? (CO9)

Q.30 Discuss the factors to be considered while selecting PLC. (CO9)

Q.31 What is Karnaugh maps and how does it works? (CO6)

Q.32 Explain the actuators in mechanical systems. (CO5)

Q.33 Explain the components of a hydraulic system. (CO7)

Q.34 Differentiate between analog and digital devices. (CO6)

Q.35 Discuss the types of digital logic gates. (CO3)

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

Q.36 Explain the working of various types of sensors and their applications. (CO2)

Q.37 Explain the working of various components of Pneumatic and hydraulic system in detail. (CO4)

Q.38 Discuss the working of A.C. Motors D.C. Motors and Stepper motors with the help of diagram. (CO5)