Examination May-2014

PE-408, Industrial Automation & Robotics.

Duration: 3 Hours   Max. Marks-60

Note: Section –A is compulsory. Attempt any four questions from Section-B and any two Questions from Section-C. Assume any missing data.

SECTION-A

1. (a)   Differentiate between Fixed, Programmable and Flexible Automation.
    (b)   List the desirable properties of hydraulic fluids..
    (c)   Differentiate between operation of a unloading valve and pressure relief valve..
    (d)   Draw truth table for a Exclusive OR gate.
    (e)   Explain the need of a filter and lubricator in pneumatic systems.
    (f)   Describe a hydraulic meter in circuit for speed control.
    (g)   Explain continuous path control of robotic systems with its applications.
    (h)   Draw the following orientation devices (i) wiper blade (ii) ledge type.
    (i)   Classify and list robotic manipulators based on Geometry.
    (j)   Draw figure of a robot wrist and explain the various motions of it.

                                                        (2*10=20)

SECTION-B

2. Describe the construction and working of a pressure reducing valve.
3. Explain the working of a hydraulic circuit used for synchronizing the motion of two linear actuators.
4. Explain the working of tactile array sensor used in robot gripper.
5. Explain the working of a shuttle valve and twin pressure valve with the help of a pneumatic logic circuit.
6. Explain the working of a reciprocating fork hopper feeder.

                                                        (4x5=20)

SECTION-C

7. (a) Explain the various drive systems for robot grippers.   (5)
    (b) Explain the master slave technique used for spray painting using robots.   (5)
8. (a) Explain the working of a fluidic sensor.   (5)
    (b) Explain the working of a hydraulic sequence valve.   (5)
9. Write notes on: (i) Programmable logic controllers.
                    (ii) Teach pendant programming of robots.
                    (iii) Pneumatic time delay valve.   (3+4+3)

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