

Code :R7420205

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IV B.Tech II Semester(R07) Regular Examinations, April 2011
PROGRAMMABLE LOGIC CONTROLLERS
(Electrical & Electronics Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions
All questions carry equal marks

1. Explain overall PLC system with neat sketch.
2. Explain contact and coil input programming with at least three examples.
3. $(a) (\overline{x + y + z + w}) \cdot (a + b + c + d) = s$
 $(b) xyz \cdot (\overline{a + b + c + d}) = s$

Draw the equivalent digital gate logic, relay logic and PLC logic.

4. Explain spray process system with a ladder logic diagram.
5. Explain the role of the timers and counters in PLC.
6. Explain data handling functions with neat sketches.
7. Explain PLC matrix functions.
8. Explain Analog PLC operations with at least three examples.

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1. (a) List the advantages and disadvantages of the PLC.
(b) Explain programming formats of PLC.
2. (a) Explain drill press method with ladder diagram.
(b) Explain contact and coil output programming with one example.
3. Explain relation between the digital gate logic to contact (or) coil logic with at least three examples.
4. What are the registers in PLC and explain each with neat sketch.
5. Explain the timer functions of PLC and write one industrial application of timer.
6. (a) Explain SKIP function and its applications.
(b) Explain master control relay functions and applications.
7. Explain controlling of two axis Robot with PLC.
8. Explain about PID control of continuous process with neat sketches.

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1. Explain over all PLC system.
2. Explain the contact and coil input/output programming examples.
 - (a) Simple one-switch, one-coil contact
 - (b) Standard start-stop-seal control
3. Draw the equivalent gate diagram and PLC ladder diagram for the following:
 - (a) $a \oplus b = s$
 - (b) $(x + y) \cdot (\overline{xy}) = s$
 - (c) $abcd + (x + y + z + w) = s$
 - (d) $\overline{xy + wv} = s$
4. Explain the following registers:
 - (a) Input
 - (b) Holding
 - (c) Output
5. Explain with one example:
 - (a) Binary to decimal conversion.
 - (b) Decimal to binary conversion.
6. Explain the following functions:
 - (a) JUMP with Non Return.
 - (b) JUMP with Return.
7. Explain industrial three axis robot with PLC control.
8.
 - (a) Explain about PID modules.
 - (b) Explain multi-bit data processing.

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1. (a) Explain about programming equipment.
(b) Explain about Input/output modules.
2. Explain contact and coil I/O programming with at least three examples.
3. Draw the equivalent gate and PLC ladder diagram for the following:

$$(a) [(P + \overline{Q} + R) \cdot (u + v) \cdot \overline{w} \cdot x] + (S + T) \cdot Y = z$$

$$(b) (101.103.105) + (111.113) = R$$

$$(c) \overline{(L + \overline{M} + N)} + (Q \cdot R) \cdot R = S$$

4. Explain the role of the registers in PLC.
5. (a) State one industrial application of timers and explain.
(b) State one industrial application of counter and explain it.
6. Write short note on following functions.
 - (a) MOVE
 - (b) FIFO
 - (c) CLR and sweep
 - (d) JUMP
7. Explain controlling of three axis robot using PLC control.
8. Explain PLC matrix function.
