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T.Y. B.Tech. (E & TC) (Part - III) (Semester - V) (CBCS) Examination, December - 2023

INDUSTRIAL AUTOMATION (OE-1)

Sub. Code : 80811/84922

Day and Date : Friday, 08 - 12 - 2023 **Total Marks : 70**

Time : 10.30 a.m. to 1.00 p.m.

Instructions : **1) All questions are compulsory.**
2) Figure to right indicate full marks.

Q1) i) A good application for a timed interrupt in a PLC program would be
a) A communications function block
b) A PID function block
c) A math function block
d) A motor start/stop rung

ii) Ladder logic programming consists primarily of
a) Virtual relay contacts and coils
b) Logic gate symbols with connecting lines
c) Function blocks with connecting lines
d) Text-based code

iii) Supervisory Control And Data Acquisition (SCADA) system in a power plant monitors and controls
a) Temperatures, speeds of pumps and motors
b) Open and close valves.
c) Both (a) & (b)
d) None of the mentioned

iv) The common communication protocols used in DCS include
a) Ethernet b) HMI
c) Device Net d) Control net

v) When a relay is NOT energized
a) There is an electrical path through the NO contacts
b) There is an electrical path through the NC contacts
c) Neither the NO or the NC contacts have an electrical path
d) Both the NO and the NC contacts have an electrical path

vi) In a current sinking DC input module _____
   a) The current flows out of the input field device
   b) Requires that a AC sources be used with mechanical switches
   c) The current flows out of the input module
   d) Currents can flow in either direction at the input module

vii) Current flows into the _____
   a) Input terminal of a sinking DC input module
   b) Input terminal of a sinking output field device
   c) Output terminal of a sinking input field device
   d) All of the above

Q2) Attempt any Two **[14]**

a) Illustrate automation. Explain role of automation.
b) Explain Ladder programming for PLC.
c) Summarize SCADA system

Q3) Attempt any Two **[14]**

a) Explain working of PLC.
b) Illustrate PID. Explain need of interfacing.
c) Explain different programming techniques of SCADA system

Q4) Attempt any Two **[14]**

a) Explain various programming languages used in DCS. Explain any one.
b) Explain functions, advantages & limitations of DCS.
c) Discuss database management using DCS with example.

Q5) Attempt any Two **[14]**

a) Draw & Explain layout of DCS.
b) Discuss communication protocols in DCS.
c) Compare PLC & DCS.

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