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SARDAR PATEL UNIVERSITY

Vallabh Vidyanagar - 388120

B. Sc. - 5th Semester (Instrumentation) Examination 2019

US05CINS04 (Programmable Logic Controller - 1)

Day and Date: Monday, 18/11/2019

Time: 10:00 am to 01:00 pm

Maximum Marks: 70

Que 1 Objective Type Questions. [10]

1 _____: A mode of operation in which the machine RUNs for one complete operation and then automatically STOPs.

a) RUN b) ON

c) CYCLE d) JOG

2 In _____ state of instrument, power is applied to the instrument and to the instrument control circuits.

a) ON b) JOG

c) RUN d) CYCLE

3 _____ of PLC can be used when time to be "stretched".

a) Delay-off time delay relay b) Electromechanical relay

c) PLC counter d) Delay-on time delay relay

4 In _____ state, the industrial instrument/machine is in ON state but not in RUNNING state.

a) RUN b) STOP

c) JOG d) ON

5 _____ is considered as a heart of programmable logic controller (PLC).

a) PLC Programming unit b) PLC Input module

c) PLC Processor d) PLC output module

6 An automation engineer can enter or/and edit the control program to be executed with the help of _____.

a) PLC input module b) Mounting rack

c) PLC Processor d) PLC Programming unit

7 _____ is not physical component of programmable logic controller (PLC).

a) ON-OFF Switch b) Red Light

c) Electromechanical Relay d) Internal relay

8 _____ provides suitable operating frequency for PLC.

a) Power Amplifier b) Oscillator

c) Signal Diode d) Varactor diode

9 _____ of programmable logic controller is useful for delaying turn-on events.

a) Industrial counter b) Delay-off time delay relay

c) Delay-on time delay relay d) Industrial relay

10 _____ is also known as a rotary switch.

a) JOG b) Selector switch

c) Push button d) Limit switch (LS)

Que 2 **Short Questions (Attempt Any Ten)** [20]

1 Explain importance of 'two-handed operation' of programmable logic controller (PLC).

2 What do you mean by 'JOG' and 'ON' with respect to programmable logic controller (PLC)?

3 What is pushbutton? Explain it with respect to programmable logic controller (PLC).

4 Explain terminology 'RUN' and 'CYCLE' in terms of programmable logic controller (PLC).

5 Why output module is used in programmable logic controller (PLC)?

6 Enlist different programmable logic controller (PLC) programing languages.

7 What is control system?

8 In terms of programmable logic controller (PLC), explain what oscillator is.

9 Explain what internal relay is. Is it programmable component?

10 Draw programmable logic controller (PLC) ladder diagram of disagreement circuit.

11 Discuss importance of fuse with respect to industrial control systems.

12 Why indicator lamps are used in industry?

Que 3 [A] Why 'control transformers' are used in industrial control systems? [05]

[B] Explain why delay-on and delay-off timer relays are used in advanced control systems? [05]

OR

Que 3 [A] With necessary symbol/s, explain 'selector switch' used in industrial automation. What do you mean by 'pushbutton switch actuator'? [05]

[B] Write a note on electromechanical relay. What is its use? [05]

Que 4 [A] Why latching contacts are used in programmable logic controller (PLC)? [05]

[B] Draw programmable logic controller (PLC) ladder diagram of OR AND operation. Explain it. [05]

OR

Que 4 Give an account of 'single cycle' with respect to programmable logic controller (PLC). [10]

Que 5 [A] Give programmable logic controller (PLC) configuration. Explain it in detail. [05]

[B] What is programmable logic controller (PLC)? How it differs from personal computer (PC)? [05]

OR

Que 5 With respect to industrial automation and programmable logic controller (PLC), explain what 'solve the ladder' is. [10]

Que 6 [A] Draw the programmable logic controller (PLC) ladder diagram of majority circuit. Explain it. [05]

[B] Draw the programmable logic controller ladder diagram of 'always-ON' and 'always-OFF' contacts. Explain them. [05]

OR

Que 6 [A] Write a note on physical components of programmable logic controller (PLC). [05]

[B] What is 'program component'? Explain it in detail with respect to programmable logic controller (PLC). [05]