2101181

BACHELOR OF VOCATION

Robotics and Automation

Subject: Industrial Automation System

Subject Code: RA-601

Semester: Third

January 2021

Theory (External): 35 Marks

Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 1 mark.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 5 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)
(10x1=10 Marks)

A Programmable Logic Controller (or PLC) is a specialized _____ that can control machines and processes.

(a) analog computer
(b) digital computer
(c) input interface
(d) Non of theses

B Which of the following is a part of a PLC CPU?

(a) Address buses
(b) Arithmetic Logic Unit
(c) Input unit / Output unit
(d) Relays

C If any part of this PLC fails then the whole unit has to be replaced

(a) Modular
(b) Unitary
(c) Rack-Mounted
(d) None of theses

D the range of values around the set point of a measured variable where no action occurs in an automatic flow controller is called

(a) Dead band.
(b) Error.
(c) Deviation.
(d) Bias.

E What are the different control systems used in Automation?

F What is Encoder ?

G What is Actuator ?

H Define relay logic

I What is the function of retentive timer

J The automatic control of variables is known as

(a) Response
(b) Command
(c) Process Control
(d) Process Controller

SECTION –B (ESSAY TYPE QUESTIONS)
(5x5=25 Marks)

1 What is industrial automation? What are the different types of automation?

2 What is programmable logic controller design?

3 What is a control system? State the commonly used elements in different blocks of feedback control system explain the function of each of them.

4 What do ON DELAY and OFF DELAY logic devices differ from each other?

5 Draw an electronic PID controller and derive its transfer function.

6 Discuss the advantages and disadvantages of PLC over normal type of controller.

7 Why it is necessary to provide tuning of P+I+D controller? Explain the procedure for tuning of P+I+D controller.

8 Draw the ladder diagram for a three phase Star / Delta starter for an induction motor.

----END OF PAPER----