

B.TECH SEM – VII (2007 COURSE) (ELECTRONICS ENGG.) :
SUMMER - 2018

SUBJECT: PROGRAMMABLE INDUSTRIAL CONTROLLERS

Day : **Wednesday**
Date : **23/05/2018**

S-2018-2785

Time : **02.30 PM TO 05.30 PM**
Max. Marks : 80

N.B:

- 1) **Q.No.1 and Q.No.5 are COMPULSORY.** Out of the remaining questions attempt **ANY TWO** questions from each section.
- 2) Answers to both the sections should be written in **SEPARATE** answer books.
- 3) Figures to the right indicate **FULL** marks.
- 4) Assume suitable data if necessary.

SECTION – I

- Q.1** a) Compare conventional electrical diagram to PLC ladder diagram. [05]
b) With suitable example explain latch and unlatch instruction in PLC. [05]
c) What is the difference between on-line and off-line editing? [04]
- Q.2** a) i) Explain the difference between fixed and modular PLC. [07]
ii) Explain the factors to be considered in selecting PLC.
b) With a suitable example, brief the operation of: [06]
i) Sequencer ii) FIFO
- Q.3** a) A process has 4 inputs which are connected to four PLC counters: [07]
A INO1 – up counter
B INO2 – down counter (preset at 20)
C INO3 – up counter
D INO4 – down counter (preset at 25)
When A reaches 7 or B reaches 0, O/P L is to go ON.
When C reaches 6 and D reaches 0, O/P M is to go ON.
When L and M are ON, N is to go ON.
b) With suitable example explain in detail the operation of delayed ON and [06]
delayed OFF timer. What is an interval timer?
- Q.4** a) Define: [07]
i) Sensor v) SUB instruction
ii) Read/write memory vi) Sinking output
iii) LAN vii) Sourcing output
iv) WAN
- b) There are two conveyors each with sensors to count parts entering the [06]
conveyors. There are three indicating lights for the proceeds.
Number of parts on the conveyors equal – White.
Number of parts on the conveyors 1 is greater – Green.
Number of parts on the conveyors 2 is greater – Blue.
Draw the PLC diagram.

P.T.O.

SECTION – II

- Q.5** a) What is the difference between analog and discrete inputs? [05]
- b) Draw the diagram of AC isolated output module. What is the function of interposing relay? [05]
- c) What are the features of SCADA? [04]
- Q.6** a) The linear input of 0 to 80 volts is to be displayed on a 9999- maximum count BCD output. Find out BCD value corresponding of 32 volts through the system. [08]
- b) Give the advantages and disadvantages of solid state switching. [05]
- Q.7** a) With a neat diagram explain the 7-layer communication model for CAN. [07]
- b) Brief with block diagram the hierarchy in a profibus networks. [06]
- Q.8** Draw the block and the PLC ladder diagram for the following sequence: [13]
- a) Fill the tank to the level desired.
 - b) Heat and stir the liquid to jet point temperature.
 - c) Hold for 15 minutes.
 - d) Empty the tank.
 - e) Repeat the operation.

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