[Total No. of Printed Pages:2] **CODE NO:- Z-113**

FACULTY OF ENGINEERING

B.E (EE/EEP/EEE) Year Examination - June – 2015

Industrial Automation

(Revised)

[Time: Three *Hours*] **[Max. Marks:80]**

"Please check whether you have got the right question paper."

i) Q. no 1 & Q. No 6 are compulsory
ii) Solve any two questions from remaining questions from each section A & B.
iii) Figures to the right indicate full marks.

SECTION-A

Q.1 Solve any five 10

1) What is actuator? List the names of actuator.
2) What are the low energy output signals of controllers used in electrical & pneumatic system? Write their range.
3) What is mean by discrete & continuous variable? Give the example.
4) What is ladder diagram? Give one example.
5) List four input & output devices connected to programmable logic controller.
6) What are the serial standards used for serial communication with PLC?
7) What are the types of automation used for different operations?
8) Draw traditional control system diagram.

Q.2 a) How to automate only one process operation & multiple process operation? Draw & explain automated system. 08
b) How level of automation is described as manually operated, semi-automatic & fully automatic? Explain in detail. 07

Q.3 a) How a liquid level in a tank is controlled by continous control & discrete control? Explain if they applied separately & compositely. 08
b) What is factory automation? Give the example. 07

Q.4 a) Why digital control supervisory control is required? How it is achieved? What are their features, merits & demerits? 08
b) Draw & explain functional programmable logic controller. 07

Q.5 a) How starter & overload protection is provided to AC motor using PLC? Draw ladder diagram & exaplin. 08
b) How analog PLC operation is implemented? Explain in detail. 07

SECTION-B

Q.6 Solve any five 10

1) What is DCS? What are its advantages?
2) What is the function of a protocol driver program?
3) From configuration how device address & data is made in MTU?
4) List the data variables acquired from different substation using SCADA system.
5) List communication techniques used in SCADA system.
6) List the applications of DCS.
7) How displays are categorised in DCS?
8) What are the functions of SCADA?

Q.7 a) How SCADA is implemented for power system operation? Explain. 08
b) How automatic substation control is achived using SCADA system? Explain. 07

Q.8	a)	What is DCE & DTE(data collection Equipment & data transmission Equipment)? What its function? Explain.	07
	b)	How protocols divide binary message into various fields? How data is configured in RTU or MTU?	08
Q.9	a)	Draw & explain basic DCS architecture.	08
	b)	How communication links are used in DCS? How it links to process station & control centre? Explain.	07

Q.10 Write short notes on <u>any three</u> 15

a) Function of Alarm handling & trending
b) Access control & logging
c) Alarm functions in SCADA & DCS.
d) Difference between DCS & traditional control system.