

- N.B.: (1) Question no. 1 is compulsory.  
(2) Attempt any three questions from remaining.  
(3) Figures to the right indicates full marks.  
(4) Assume suitable data if required. Justify the same.

Q.1	a)	Explain the role of automation in industry.	05
	b)	Explain RS 485 protocol.	05
	c)	Explain the PLC programming methods as per IEC 1131-3.	05
	d)	Compare DCS and SCADA system.	05
Q.2	a)	Explain in detail how the Process Hazard Analysis helps employers to improve safety.	10
	b)	In automation system how PID controller along with PLC helps to improve the accuracy of response.	10
Q.3	a)	Explain the automation pyramid in detail.	10
	b)	Describe development stages of PLC based automation system	10
Q.4	a)	Draw & explain FOXBORO DCS system and compare it with automation pyramid.	10
	b)	Design a car parking system using PLC and write a program in sequential flow chart.	10
Q.5	a)	Explain Fuzzy logic.	08
	b)	Describe the CNC machines with working its working principle.	06
	c)	Explain database management of DCS system.	06
Q.6	a)	Explain IEC 61511 standard and compare it with IEC 61508.	08
	b)	With respect to OSI model compare HART.	06
	c)	Compare PLC, PCS & PAC based system	06

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