GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-V • EXAMINATION – SUMMER • 2015

Subject Code: 151714 Date: 15			/05/2015	
Sul Tir Inst	Subject Name: Industrial Control System Time: 02.30pm-05.00pm Total Ma Instructions:		rks: 70	
	1. 2. 3.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.		
Q.1	(a)	Write the symbols used in P&I Diagrams for the following- i)Pneumatic Signal ii)Orifice plate iii) Field mounted instrument iv) Level gauge external mounted.	04	
	(b)	Write the symbols used in PLC programming for the following- i)Push button-Normally open ii) Pressure Switch-Normally closed iii) Relay coil	03	
	(c)	Define the following – i)Proportional controller, ii)Scan time of PLC, iii)Trim of control valve, iv) Proportional Band, v) Bonnet Assembly of control Valve vi) Reverse Acting controller, vii) Control Flow Coefficient	07	
Q.2	(a) (b)	What is integral reset wind-up? How it can be prevented? Explain the features of ratio control system and also its various configurations with one example	07 07	
	(b)	OR Which are various features for the selection of control valves?	07	
Q.3	(a)	Draw the P&I Diagram for the following process- The level in the tank T-101 is measured with the help of D.P. type level transmitter with electric output and is controlled with the help of panel mounted indicating controller. The pneumatically operated control valve is installed in the out-going line from the tank. The control loop identification number is 110.	07	
	(b)	Discuss the loop identification and functional identification in P&I Diagrams	07	
Q.3	(a)	Explain the open loop & closed loop control system with suitable examples. Also explain which system is better of these two & why?	07	
	(b) (c)	What is Ziegler-Nichols method? What for is it used? Which feature of On-Off controller makes it unsuitable for continuous process	04 03	
Q.4	(a) (b)	Explain the structure of DCS in detail What is SCADA? Explain it with suitable example OR	07 07	
Q.4	(a) (b)	Explain the various parts of PLC and overall working of PLC. Explain the timer or counter function with example used in PLC.	07 07	
Q.5	(a) (b)	Explain the electronic PID controller. What are the advantages of electronic controllers over other types?	07 07	
Q.5	(a) (b)	Classify the control valves and explain the globe type valves in detail Which are the different types of process dynamic? Explain any one in detail	07 07	
