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SEAT No.__

SARDAR PATEL UNIVERSITY No. of Printed Pages:

B. Sc. - 5th Semester (Instrumentation-vocational)

US05CINV02 (Control technique-1)

Day and Date: Wednesday, 24/10/2018

Time: 10:00 am to 01:00 pm

Maximum Marks: 70

Que 1	Objective Type Questions.		[10]	
1	In control mode, the output of the control element changes at a fixed rate when the error exceeds the neutral zone.			
	a) ON-OFF	b) Multiposition		
	c) Single speed	d) Derivative		
2	is a temporary variation of one of the load parameters of given process.			
	a) Self-regulation	b) Process lag		
	c) Transient	d) Process load		
3	Control mode is not continuous control mode.			
	a) Derivative	b) ON-OFF		
	c) Proportional	d) Integral		
4	The range of error to cover the 0 % to 3	100 % controller output is called		
	a) Proportional band	b) Direct action		
	c) Reverse action	d) Offset		
5	Control mode represents a natural extension of the principle of floating control mode in the limit of infinitesimal changes in the rate of controller output with infinitesimal changes in error.			
	a) Derivative	b) Integral		
	c) Proportional	d) Multiposition		
6	Control mode: Controller output d	epends on the rate of change of error.		
	a) ON-OFF	b) Multiposition		
·	c) Derivative	d) Integral		
7	The air used in the instrument air syste	em should not be		
	a) Clean	b) Dry		
	c) Oil-free	d) Humid		
8	Refrigerated air dryers use to coo	l the air to a lower temperature.		
	a) Water	b) Refrigerant		
	c) Coolant	d) Cooling agent		
9	Gas analyzers depend for their operation upon the fact that some gases and vapors absorb specific wavelengths of infrared radiation.			
	a) Paramagnetic oxygen	b) Magnetic wind type		
	c) Thermal conductivity	d) Infrared		
10	is not paramagnetic in nature.			
— -	a) Nitric oxide	b) Nitrogen dioxide		
	c) Oxygen	d) None of these		

Que 2	Short	t Questions (Attempt Any Ten)	[20]		
1	Differentiate: Discontinuous and continuous control mode.				
2	The temperature has range of 300 to 440 K and a set point of 384 K. Find the percent of span error when the temperature is 379 K.				
3	Suppose a process error lies within the neutral zone with p=25%. At t=0 sec, the error falls below the neutral zone. If K=2% per second, find the time when the output saturates.				
4	Define: Direct action and reverse action.				
5	Enlist characteristics of integral control mode.				
6	What are the main advantages of proportional-integral control mode?				
7	Enlist the problems caused by water in the control lines.				
8	Enlist the important factors for designing of an instrument air system.				
9	Give an account of pressure level of an instrument air system.				
10	Why gas analyzers are used in industry?				
11	Give classification of gas analyzer on the basis of their operating principles.				
12	Give operating principle of thermal conductivity analyzer.				
Que 3	[A]	Write a note on process equation and process load with neces example.	sary [05]		
	[B]	Discuss two-position control mode. What is neutral zone? What is importance of neutral zone?	the [05]		
	•	OR			
	[C]	Explain Multiposition control mode.	[05]		
	[D]	Give an account of floating control mode.	[05]		
Que 4	[A]	Write a detailed note on proportional control mode. What is offset?	[05]		
Que I	[B]	Discuss proportional-derivative control mode.	[05]		
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	[C]	Give an account of integral control mode.	[05]		
	[D]	Discuss derivative control mode.	[05]		
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Que 5	[A]	Write a note on reciprocating type compressor.	[05]		
·	[B]	Give an account of non-lubricated compressor and compressor cooling			
		OR			
	[C]	Write a note on sliding vane rotary compressor.	[05]		
	[D]	Write on desiccant type and refrigeration type dryers.	[05]		
	1- 3	31 3 31 3			
Que 6	[A]	Write a note on paramagnetic oxygen analyzer with necessary diagra OR	am. [10]		
	[B]	Discuss magnetic wind instruments with necessary diagram.	[10]		
	[ո]	Discuss magnetic wind modulinents with necessary diagrams	[]		
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