[293]

SARDAR PATEL UNIVERSITY
T.Y. B. Sc, Vth Semester
Monday, 18th November 2013
Session: Morning, Time: 10:30 AM TO 01:30 PM
Subject Code: US05CINS03
Course Title: Introduction to Control System

Max Marks: 70

Que 1 **Write correct answer for each of the following MCQs.** **[10]**

1 The permanent residual error introduced by proportional control mode is called _____.
   a) Transient b) Offset
   c) Dead time d) Process lag

2 The deviation of the controlled output from the set point is called __.
   a) measured variable b) standard deviation
   c) controlled variable d) error

3 The relation between Kp and proportional band is ____ .
   a) Inverse b) linear
   c) square d) square root

4 The range of error to cover -------- controller output is called Proportional Band.
   a) 0% to 50% b) 0% to 100%
   c) Both a) and b) d) None of the above

5 In ----- compressor, the compressing fluid is generally water.
   a) Sliding vane rotary b) screw
   c) liquid piston d) reciprocating

6 The selection of a particular type of dryer depends on ------.
   a) dew point b) desired relative humidity
   c) quantity of air flow d) all of above

7 The 1 / 2 inch sub header can provide air to _____ number of maximum pilots.
   a) 2 b) 4
   c) 6 d) 8

8 A special type globe body, consisting of two body halves with a seat ring clamped between them, is called a -------- valve.
   a) single port b) double port
   c) three way d) split body

9 ------- valve is used to divert the fluid at 90°.
   a) Single port b) Double port
   c) Diaphragm d) Angle

10 The part of the valve body which comes in the contact with the fluid is known as -----.
   a) Seat b) Stem
   c) trim d) plug

Que 2		**Write answers of any ten questions in brief.**	**[20]**
	1	What is process equation?	
	2	Define cycling and Dead time.	
	3	What are direct and reverse actions of controllers?	
	4	Differentiate between discontinuous and continuous controller modes.	
	5	Write the characteristics of Integral Control Mode.	
	6	Write the equation for controller output in PID mode.	
	7	What is sizing criterion?	
	8	Enlist various factors to be considered for designing the air system.	
	9	Justify the statement: It is better to use dryers than not to use it.	
	10	Explain the function of valve positioner.	
	11	State the main features of single port valve.	
	12	What is bonnet assembly? Enlist its type.	
Que 3	**[A]**	Write a detailed note on control system parameters.	**[05]**
	[B]	Explain the floating control mode with single speed.	**[05]**
		OR	
Que 3	**[C]**	Discuss two position control mode.	**[05]**
	[D]	Discuss multiposition control mode.	**[05]**
Que 4	**[A]**	Discuss proportional Control Mode. Enlist Characteristics of Proportional Control Mode.	**[05]**
	[B]	Write a note on Proportional - Integral (PI) Control Mode.	**[05]**
		OR	
Que 4	**[C]**	Write a note on Derivative Control Mode.	**[05]**
	[D]	Discuss proportional- Integral -Derivative (PID) Control Mode.	**[05]**
Que 5	**[A]**	Discuss typical instrument air system with necessary diagrams.	**[10]**
		OR	
Que 5	**[B]**	What are Dryers? Discuss heated type desiccant dryers.	**[10]**
Que 6	**[A]**	Draw the figure of the angle valve and explain it.	**[05]**
	[B]	Write a note on valve coefficient and valve rangeability.	**[05]**
		OR	
Que 6	**[C]**	Discuss diaphragm valve in detail.	**[05]**
	[D]	What are flow characteristics? Explain in detail.	**[05]**

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