

Reg.No. _____



Karunya UNIVERSITY

(Karunya Institute of Technology & Sciences)
(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

End Semester Examination – Nov/Dec – 2016

Code : **14EI2046**
Sub. Name : **Process Control for Food Engineers**

Semester : **2016-17 ODD**
Duration : **3hrs**
Max. marks : **100**

ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)

Q. No.	Sub Div.	Questions	Course Outcome	Marks
1.	a.	Write the Difference between open loop and closed loop control system.	CO 1	5
	b.	Find Laplace Transform of $\cos(at)$.	CO 1	10
	c.	Write short note on servomechanism.	CO 1	5
(OR)				
2.	a.	With an suitable example, explain the design concepts involved in PI controller.	CO 3	10
	b.	Explain in detail about the Construction and working of pneumatically operated Control valve with neat sketch.	CO 3	10
3.	a.	Use Mason's gain formula to determine the overall transfer function of the system shown in Figure.	CO 1	15
	b.	Convert the block diagram into signal flow graph.	CO 1	5
(OR)				

4.	a.	Determine the overall transfer function $C(S)/R(S)$ for the system shown in figure using Block Diagram reduction rules.	CO 1	15
	b.	Write short note on the classification of transducers.	CO 3	5
5.	a.	<p>Compare the following temperature transducers:</p> <ul style="list-style-type: none"> • Thermocouple • RTD • Thermistor <p>Illustrate your answer by defining the output from each, stating approximate temperature ranges that can be measured and sketch the relationship between temperature and output for each transducer. Also, list one advantage and disadvantage for each device</p>	CO 3	20
(OR)				
6.	a.	Determine the stability of the system using Routh array method whose characteristics equation given by	CO 2	15
		$S^4 + 8S^3 + 18S^2 + 16S + 5 = 0$		
	b.	write short note on Primary transducer for Pressure measurement.	CO 3	5
7.	a.	Briefly explain about the principle of strain gauge - pressure transducer with a neat diagram.	CO 3	10
	b.	List the Non-contact type of level transducers and Explain with the neat sketch, the construction and working principle.	CO 3	10
(OR)				
8.	a.	Explain the concept in measuring Density using LVDT and Hydrometer.	CO 3	14
	b.	Write the principle in measuring the level using Simple float system.	CO 3	6
		Compulsory:		
9.	a.	Explain in detail about the construction and working of pH meter	CO 3	10
	b.	With the neat diagram explain about Gas Chromatography.	CO 3	10

ALL THE BEST