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Name of Examination : **Summer 2021** - (Preview)

Course Code & Course Name : **IN351U - Process Instrumentation**

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Maximum Marks : **60**   Duration : **3 Hrs**

Edit   Print   View Answer Key   Close   **Answer Key Submission Type:** Marking scheme with model answers and solutions of numerical

Instructions:

1. *All questions are compulsory.*
2. *Illustrate your answer with suitable figures/sketches wherever necessary.*
3. *Assume suitable additional data; if required.*
4. *Use of logarithmic table, drawing instruments and non programmable calculators is allowed.*
5. *Figures to the right indicate full marks.*

1)	a)	List and explain the process variables associated with any process in general with the help of a neat diagram.	[8]
	b)	Explain in short (Any two)	[4]
	i.	Self-regulating process	
	ii.	Interacting Process	
	iii.	Proportional gain	
2)	a)	Define degrees of freedom. Calculate the degree of freedom if the number of variables associated with the system is 8 and the number of defining equations is 2.	[4]
	b)	Explain empirical, theoretical, and semi-empirical approach in modelling.	[6]
	c)	Define dead time in the process.	[2]
3)	a)	Draw and explain the process reaction curve.	[4]
	b)	Enlist the different final control elements used in the process control. What is the impact of the On-Off controller on the final control elements in general?	[4]
	c)	Discuss derivative control mode in short.	[4]
4)	a)	Define controller tuning. Enlist different tuning methods and explain anyone in detail.	[6]
	b)	Draw and discuss with example split range control in the process.	[6]
5)	a)	Explain in brief the decoupling in control loops	[6]
	b)	Compare in between feedback and feedforward control strategy.	[6]

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