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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

THIRD SEMESTER M.TECH DEGREE EXAMINATION, DECEMBER 2017

Electrical and Electronics Engineering

Stream : Control System, Guidance and Navigational Control , Electrical Machines

01EE7113 Advanced Instrumentation

Answer *any two full* questions from *each* part

Limit answers to the required points.

Max. Marks: 60 Duration: 3 hours

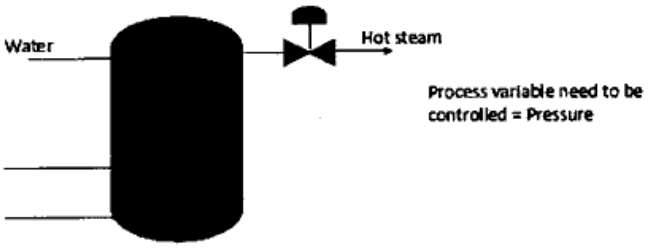
PART A

1.	a.	Discuss in detail about static calibration.	2
	b.	Define the term sensitivity of an instrument.	2
	c.	Describe the transfer function of a first order system with an example.	5
2.		Explain the dynamic response of a second order instrument for different values of damping factor.	9
3.	a.	Describe the dynamic characteristics of an instrument.	4
	b.	Explain the response of a general form of instrument to periodic input.	5

PART B

4.	a.	Draw a basic PID loop and explain the various blocks in detail.	7
	b.	What does the instrumentation number **LIC 10003** represent.	2

5. a. Figure below shows the boiler system that used to supply hot steam to a turbine. This system need to supply 100 psi hot steam to the turbine where the PCV-100 will be opened when the pressure reached that desired pressure. With using pressure control through temperature and pressure measurement in the boiler, draw a feedforward-plus-feedback control loop system. 4



b. Define PertiNet and explain it with an example. 3

c. List few applications of smart sensors. 2

6. a. Explain the cascade type process control loop. 2

b. Discuss in detail the WSN architecture. 7

PART C

7. a. Draw the block diagram of virtual instrumentation and explain each block in detail. 8

b. What are the advantages of virtual instrumentation over conventional instrumentation? 4

8. a. What is a sub-VI? 3

b. Explain in detail the steps to create a sub-VI. 6

c. Define file I/O? 3

9. a. List some of the applications of virtual instrumentation. 4

b. Explain for loop and while loop with examples. 8