Printed Pages:01 **Sub Code:MTEE-202**

Paper Id: 220211 **Roll No.** | | | | | | | | | | |

M. TECH.

(SEM II) THEORY EXAMINATION 2018-19

ADVANCED INSTRUMENTATION CONTROL

Time: 3 Hours ***Total Marks: 70***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 7 = 14

a. What are the basic elements of a generalized instrumentation system?

b. Discuss open loop response for unit step input.

c. Define transducers with examples.

d. What are semiconductor sensors?

e. Differentiate between variable conversion elements and variable manipulation elements.

f. List the various applications of programmable logic controller.

g. What are the different types of controllers used in control systems?

SECTION B

2. Attempt any *three* of the following: 7 x 3 = 21

a. Describe construction and design of strain gauge. What are the uses of these transducers?

b. Draw the block diagram of a d.c.signal conditioning system and explain the functions of each block.

c. State the advantages and limitations of state model using phase variables.

d. Why is distributed control necessary in automation of energy distribution system?

e. What are the basic elements of a generalized measurement system, explain in detail?

SECTION C

3. Attempt any *one* part of the following: 7 x 1 = 7

(a) Describe the different electrical method for measurement of liquid level. Compare their advantages and disadvantages.

(b) Differentiate between active and passive transducers with the help of suitable examples.

4. Attempt any *one* part of the following: 7 x 1 = 7

(a) Describe one method of digital to analog conversion (D/A).

(b) Describe how with the use of operational amplifiers we can get a linear response between output voltage and input displacement when the capacitive transducers are used in a mode where the variation of capacitance with distance between the plates.

5. Attempt any *one* part of the following: 7 x 1 = 7

(a) Write a brief note on advanced control techniques with the help of suitable block diagram.

(b) What is cascade and ratio control schemes?

6. Attempt any *one* part of the following: 7 x 1 = 7

(a) State the various properties of state transition matrix.

(b) Discuss with optimum controller settings of damped oscillation method.

7. Attempt any *one* part of the following: 7 x 1 = 7

(a) What are the basic modules of a PLC? Explain any one industrial application of PLC in detail.

(b) What do you mean by tuning of multivariable controllers?

Dr. Rajesh Tewari | 02-Jun-2019 1:33:10 PM | 139.5.198.30

Dr. Rajesh Tewari | 02-Jun-2019 1:33:10 PM | 139.5.198.30