

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY: PUTTUR
(AUTONOMOUS)
B.Tech III Year II Semester Regular Examinations August-2023

INDUSTRIAL INSTRUMENTATION
(Open Elective - II)

Time: 3 Hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a What are the basic blocks of a Measurement System? Draw the various blocks and explain the functions. CO1 L1 6M
- b Errors in measurements can be classified as: (i) Gross errors (ii) Systematic errors (iii) Random errors. Explain these errors by giving suitable examples. Discuss the mean adopted to minimize these errors CO1 L2 6M

OR

- 2 Define and explain the terms (i) Modulation (ii) Periodic (iii) Aperiodic (iv) Sampled Data (v) Modulation (vi) Sampling CO1 L2 12M

UNIT-II

- 3 a Describe the salient features of A.M. and F.M. telemetry and compare them. CO2 L2 6M
- b With the help of a suitable block diagram explain about a Digital data acquisition system. CO2 L2 6M

OR

- 4 a Describe the comparison between FM, PAM and PCM telemetering systems CO2 L4 6M
- b What are the different types of Multiplexing used in Data acquisition system. Explain about any one of them. CO2 L1 6M

UNIT-III

- 5 a Explain the term "total harmonic distortion". Describe the functioning of a total harmonic distortion meter. CO4 L2 6M
- b Explain with a neat sketch the working details of Ramp type digital voltmeters. CO3 L2 6M

OR

- 6 Describe the circuits and working of frequency selective and heterodyne wave analyzers CO4 L2 12M

UNIT-IV

- 7 a Describe the different criteria for selection of transducers for a particular application. CO6 L2 6M
- b What is piezo-electric effect and explain its theory of operation. Identify the most commonly used piezo electric materials. CO5 L3 6M

OR

- 8 Explain the construction and principle of working of a linear voltage differential transformer (L.V.D.T). Explain how the magnitude and direction of the displacement of core of an L.V.D.T. is detected? CO5 L2 12M

UNIT-V

- 9 Examine the construction and working of the following types of accelerometers: (i) Potentiometric type, (ii) LVDT type, (iii) Piezoelectric type. Describe their advantages and disadvantages. CO5 L3 12M

OR

- 10 a Explain the working of strain gauge type of torque transducers. Explain its advantages and disadvantages. CO5 L2 6M
- b With suitable diagrams and expressions, explain about the measurement of flow using hot wire anemometer. CO6 L2 6M

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