

325652(25)

**B. E. (Sixth Semester) Examination,
Nov.-Dec. 2018**

(New Scheme)

MODERN INSTRUMENTATION TECHNIQUES

(Branch : EEE)

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : All questions are compulsory and each question carries equal marks. There are 4 parts of each question, part (a) is compulsory. Attempt any two parts of (b), (c) and (d). Diagram should be neat, clean and properly labeled.

Unit - I

- 1. (a) What do you mean by Errors in measuring instruments. Give its importance. 2

325652(25)

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- (b) Give details of testing of CTs (Silsbee's method). 7
- (c) Describe in details the statistical treatment of data with different form. 7
- (d) A watt meter having a range 1000 W has an error of $\pm 1\%$ of full scale deflection. If the true power is 100 W. What would be the range of readings? Suppose the error is specified as percentage of true value. What would be the range of the reading? 7

Unit - II

- 2. (a) What do you mean by photo transducer. 2
- (b) Define photo electric transducer with principle, application and classification. 7
- (c) Write short notes : (any two)
 - (i) AC Tachogenerators
 - (ii) LVDT
 - (iii) Frequency generating transducer 7
- (d) A strain gauge is bonded to a beam which is 12 cm long and has a cross sectional area of 3.8 cm^2 . The unstrained resistance and gauge factor of the strain

325652(25)

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gauge are 220 Ω and 2.2 respectively. On the application of load the resistance of the gauge changes by 0.015 Ω . If the modulus of elasticity for steel is 207 GN/m², calculate :

- (i) The change in length of the steel beam.
 - (ii) The amount of force applied to the beam. 7
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Unit - III

- 3. (a) Define Multiplexing and Demultiplexing. 2
- (b) Give the purpose of recorder with details of potentiometric recorder. 7
- (c) What do you mean by Encoder? Differentiate between optical encoders and shaft encoders. 7
- (d) Write short notes : (any two)
 - (i) DAS with single, multi channel and computer based DAS.
 - (ii) Data loggers with A/D and D/A conversion. 7

Unit - IV

- 4. (a) Define selection of a PLC. 2

- (b) Define Ladder diagram. Draw three inputs AND, OR and NOT Gate programmable logic controller ladder diagram. 7
- (c) Show the architecture structure of a Programmable Logic Controller (PLC). 7
- (d) Give the details of Input and Output modules for PLC device. 7

Unit - V

- 5. (a) What do you mean by process control? 2
- (b) Give the details of relation of digital gate and logic to coil logic. 7
- (c) What do you mean by PLC? Explain the details of PLC time functions. 7
- (d) Draw and explain 3 inputs NAND, NOR Gates, Relay equivalent and PLC logic equivalent circuits. 7

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