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**Question Paper Code: 31572**

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Seventh Semester

Electronics and Instrumentation Engineering

01UEI702 - INSTRUMENTATION SYSTEM DESIGN

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Mention the application of thermistor.
2. Define sensitivity of a wheat stone bridge.
3. Discuss signal conditioning.
4. Draw the simple phase sensitive detector circuit.
5. What is proportional band?
6. Discuss the need for designing Two-position controller action with neutral zone.
7. List the limitations of orifice plate.
8. Write a note on square root extractors.
9. Write a note on instrument index sheet.
10. Define piping and instrumentation diagram.

PART - B (5 x 16 = 80 Marks)

11. (a) Derive an equation of balance and deflection measurement for wheat stone bridge. (16)

Or

(b) Design an instrumentation amplifier with its merits and application. (16)

12. (a) Explain the measurement of capacitance using AC bridges. (16)

Or

(b) Explain the construction and operation of LVDT in detail. (16)

13. (a) Explain the design and implementation of electronic PID controller. (16)

Or

(b) Explain the design of low level and high level annunciators. (16)

14. (a) Describe the procedural steps for Bourdon tube design. Discuss also the factors which affect its sensitivity. (16)

Or

(b) (i) Explain the procedure to design the orifice for the given flow condition. (8)

(ii) What are the factors affecting the sensitivity of bourdon gauges? (8)

15. (a) Discuss about the instrument specification sheets for flow and pressure. (16)

Or

(b) (i) Explain with an example the process flow sheet. (10)

(ii) Discuss about the preparation of Instrumentation project. (6)