

Code No: R164102D

**R16**

**Set No. 1**

IV B.Tech I Semester Advanced Supplementary Examinations, May - 2022

**INSTRUMENTATION**

(Electrical and Electronics Engineering)

Time: 3 hours

Max. Marks: 70

*Question paper consists of Part-A and Part-B*

*Answer ALL sub questions from Part-A*

*Answer any FOUR questions from Part-B*

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**PART-A** (14 Marks)

1. a) What are the types of pulse modulation? [2]
- b) List out the characteristics of transducers. [2]
- c) Write disadvantages of liquid level measurement by resistive method. [2]
- d) What are the advantages of digital voltmeters? [2]
- e) How does an oscilloscope work? [3]
- f) What are the factors which affect the measurement accuracy of Q-meter? [3]

**PART-B** (4x14 = 56 Marks)

2. a) Explain in briefly the measuring system with neat block diagram. [7]
- b) Distinguish between static and dynamic characteristics of an instrument. [7]
3. a) What is photo diode? Explain the working of thermocouple with neat sketch. [9]
- b) The strain gauge with a gauge factor of 4 has a resistance of 500  $\Omega$ . It is to be used in a test in which the strain to be measured may be as low as  $5 \times 10^{-6}$ . What will the change in resistance of gauge be? [5]
4. a) Derive the expression for gauge sensitivity of a strain gauge. [7]
- b) Describe the working of strain gauge type of torque transducer. [7]
5. a) What are the various types of digital voltmeters? Explain the working of ramp type digital voltmeter. [10]
- b) Write the advantages of dual slope over ramp type digital voltmeter. [4]
6. a) Write the important features of cathode ray tube. [7]
- b) List out the applications of oscilloscope. [7]
7. a) Describe the working of wave analyzers used for audio frequency and megahertz ranges. [9]
- b) Write the applications of wave analyzers. [5]