

**ANURAG Engineering College**

(An Autonomous Institution)

IV B. Tech I Semester Regular/Supplementary Examinations, Dec-2024

**INSTRUMENTATION****(ELECTRICAL AND ELECTRONICS ENGINEERING)****Time: 3 Hours****Max. Marks: 75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

|   | Course Outcome | B.T Level | Marks |
|---|----------------|-----------|-------|
| 1. Define linearity and resolution.                               | CO1            | L1        | 2M    |
| 2. Explain even and odd signals with help of examples.            | CO1            | L2        | 3M    |
| 3. List the major components of a cathode ray oscilloscope (CRO). | CO2            | L1        | 2M    |
| 4. How does a CRO measure the frequency of a signal?              | CO2            | L2        | 3M    |
| 5. Define a digital frequency meter and state its key function.   | CO3            | L1        | 2M    |
| 6. Write the principle of frequency selective analyzer.           | CO3            | L2        | 3M    |
| 7. Name different types of photo-electric transducers             | CO4            | L1        | 2M    |
| 8. What is the principle of photo voltaic cell?                   | CO4            | L2        | 3M    |
| 9. Explain the Seebeck effect                                     | CO5            | L2        | 2M    |
| 10. Define absolute pressure and differential pressure.           | CO5            | L1        | 3M    |

**Section B (Essay Questions)****Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

|  |     |    |     |
|--|-----|----|-----|
| 11. A) Discuss gross and systematic errors in measurement  | CO1 | L3 | 10M |
| <b>OR</b>  |     |    |     |
| B) List out the standard test signals and represent them in terms of time domain and frequency domain.                 | CO1 | L3 | 10M |
| 12. A) Derive the expression for measuring the phase difference between two signals using Lissajous patterns on a CRO. | CO2 | L3 | 10M |
| <b>OR</b>  |     |    |     |
| B) Draw the block diagram of a sampling oscilloscope and explain how it works to capture high-frequency signals.       | CO2 | L3 | 10M |
| 13. A) Describe the operation of a peak-reading voltmeter with a sketch.   | CO3 | L3 | 10M |
| <b>OR</b>  |     |    |     |
| B) Describe the architecture and operation of a ramp type DVM. Discuss its advantages and limitations.                 | CO3 | L3 | 10M |
| 14. A) What is resistive transducer? Explain different types of resistive transducers with suitable sketches.          | CO4 | L3 | 10M |
| <b>OR</b>  |     |    |     |
| B) List out different types of photo – electric transducers. Explain each of them with suitable diagrams.              | CO4 | L2 | 10M |
| 15. A) Explain linear velocity transducers with their operation and sketch.  | CO5 | L2 | 10M |
| <b>OR</b>  |     |    |     |
| B) With a neat figure, explain how level of liquid is measured.  | CO5 | L3 | 10M |