

TEE-503

1208

Odd Semester Examination, 2017-18

B.TECH. (SEMESTER-V)

APPLIED AND ELECTRONIC INSTRUMENTATION

Time: 03:00 Hours

Max Marks: 100

Note: Attempt all questions:

1. Attempt **any four** questions: [5x4]
- (a) Explain the transducers used for pressure measurement, also compare them.
 - (b) What is seed back effect? What is the basic construction and principle of thermocouple?
 - (c) Explain the resistance temperature detector.
 - (d) An LVDT is used for measuring the deflection of a bellows. The sensitivity of LVDT is 40V/mm. The bellows is deflected of 0.125mm by a pressure of $0.8 \times 10^6 \text{ N/m}^2$. Determine the sensitivity of LVDT in V per N/m^2 and the pressure when the voltage output of LVDT is 3.5V.
 - (e) Differentiate between thermocouple and thermopile.
2. Attempt **any four** questions: [5x4]
- (a) Distinguish between the following with a suitable diagram
 - i. Active and passive transducer
 - ii. Analog and digital transducer
 - (b) What is the resistance temperature detector?
 - (c) Differentiate between NTC and PTC thermistors.
 - (d) Explain the stroboscopic method for measurement of speed.
 - (e) Explain the wheatstone bridge circuit with one, two and four active elements
3. Attempt **any two** questions: [10x2]
- (a) Write short note on:
 - i. SNR
 - ii. Resistance temperature detector

- (b) Compare the digital instruments with the analog electronic instruments.
- (c) Explain the construction and working of galvanometric strip chart recorder with suitable diagram and also discuss its applications, merits and demerits.

4. Attempt **any two** questions: [10x2]

- (a) Explain semiconductor strain gauge with advantages and disadvantages.
- (b) What is pyrometer? Explain construction and working of optical pyrometer.
- (c) What is digital voltmeter (DVM)? What are its advantages? List different types of DVMs. How can DVM are used for measurement of
 - i. Current
 - ii. Resistance

5. Attempt **any two** questions: [10x2]

- (a) Write short technical note on any two of the following:
 - i. Harmonic analyzer
 - ii. Spectrum analyzer
 - iii. CRO probes
- (b) Explain the following terms:
 - i. Analog electronic voltmeter
 - ii. Ac and DC current probes
 - iii. Energy meters
 - iv. Analog electronic wattmeter
- (c) What are heterodyne wave analyzers? Explain the theory of RF heterodyne wave analyzer for a 0-2MHz RF range.
