

R09

Code: 9A02704

B.Tech IV Year I Semester (R09) Supplementary Examinations, May 2013

INSTRUMENTATION

(Electrical and Electronics Engineering)

Time: 3 hours

Max Marks: 70

Answer any FIVE questions
All questions carry equal marks

1. (a) Describe the different methods used for pulse modulation in telemetry.
(b) Describe the comparison between FM, PAM and PCM telemetring system.
2. (a) Briefly explain time division and frequency division multiplexing.
(b) With the help of a block diagram explain various components in digital data acquisition system.
3. Define the terms:
(i) Repeatability. (ii) Accuracy. (iii) Precision.
(iv) Static sensitivity. (v) Resolution. (vi) Linearity.
(vii) Static error.
4. (a) Describe the circuits and working of wave analyzers used for audio frequency and megahertz ranges.
(b) Describe the working of different frequency distortion analyzers with the help of a block diagram.
5. (a) Describe the construction, theory and working of thermocouples. Describe the different types of compensations used and also the methods of measurement of their output voltage.
(b) A strain gauge has a gauge factor of 4. If the strain gauge is attached to a metal bar that stretches from 0.25 m to 0.255 m when strained, what is the percentage change in resistance? If the unstrained value of gauge is $120\ \Omega$, what is the resistance value of gauge after application of strain?
6. (a) Explain the following methods of measuring torque:
(i) Digital method. (ii) Magnetostrictive methods.
(b) Explain the construction, working and theory of a drag CUP type tachogenerator.
7. (a) Describe the methods of measurement of pressure using
(i) Capacitive transducers. (ii) Photo-electric transducers.
(b) Discuss various methods to measure liquid level.
8. (a) Explain about aperiodic signal with examples.
(b) Compare periodic and aperiodic signals.
