

Code No: **R31044****R10****Set No. 1****III B.Tech I Semester Supplementary Examinations, May - 2017****ELECTRONIC MEASUREMENTS AND INSTRUMENTATIONS****(Common to Electronics and Communications Engineering, Electronics and Instrumentation Engineering)****Time: 3 hours****Max. Marks: 75****Answer any FIVE Questions****All Questions carry equal marks**

- 1 a) The true value of a voltage is 100V. The values indicated by a measuring instrument are 104, 103, 105, 103 and 105 volts. Find the accuracy of the measurement and the precision of the instrument. [4M]
b) What series resistance must be used to extend the 0–200V range of a 20,000Ω/V meter to 0–2000V? What power rating must this resistor have? [4M]
c) Explain how a combination of thermocouple and PMMC movement can be used to measure both ac and dc. [7M]
- 2 a) Draw the block diagram of wideband sweep generator and explain working of each block [10M]
b) Why active generators are usually of the relaxation type? [5M]
- 3 a) Explain the principle of heterodyned wave analyzer. [7M]
b) Explain the working of spectrum analyzer with suitable block diagram. [8M]
- 4 Draw the block diagram of general purpose oscilloscope and explain the function of each block. [15M]
- 5 a) What are the advantages of dual trace over dual beam for multiple trace oscilloscopes? [4M]
b) Explain the principle of frequency counter. [7M]
c) Explain how period can be measured using CRO. [4M]
- 6 Why Maxwell bridge is limited to the measurement of medium Q coils? Derive its bridge balance condition. [15M]
- 7 a) Define piezoelectric effect. Explain the operation of piezoelectric transducers in detail. [8M]
b) Explain with a circuit diagram the principle of operation of a strain measurement system having arrangement for temperature compensation. [7M]
- 8 a) What are the different elements of a digital data acquisition system and explain each one. [7M]
b) Define absolute pressure, gauge pressure, differential pressure and atmospheric pressure. [8M]
