

**2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY****III B.TECH I SEMESTER SUPPLEMENTARY EXAMINATIONS  
ELECTRONICS MEASUREMENTS AND INSTRUMENTATION  
(ELECTRONICS & COMMUNICATION ENGINEERING)**

NOVEMBER 2005

TIME – 3 HOUR

MARK – 80

**Answer any FIVE Questions  
All Questions carry equal marks**

1. (a) Explain about each block of DVM and mention advantages of them.
- (b) Explain the bridge type of thermocouple arrangement and mention its applications. [8+8]
2. Draw the block schematic of a frequency counter set for period measurement and explain how period is measured. [16]
3. The standard resistor arm of a Wheatstone bridge has a range from 0 to 100 ohm with a resolution of 0.001 ohm. The galvanometer has an internal resistance of 100 ohm and can be read to 0.5  $\mu$ A. The other two arms have each 1 kohm. The bridge is supplied with a 10 V DC source. When the unknown resistance is 50 ohm, what is the resolution of the bridge in
  - (a) ohms and
  - (b) per cent of the unknown. [16]
4. (a) Draw the circuit of a basic Q-meter and explain its principle of operation using a vector diagram.  
(b) Discuss the "Direct-connection" technique of using Q-meter. [10+6]
5. (a) Draw the
  - (b) Draw the block diagram of a dual beam oscilloscope and explain its working. [8+8]
6. (a) Explain the two types of Spectrum Analyzers.  
(b) Explain the following terms associated with Spectrum Analyzer.
  - i. Sensitivity
  - ii. Dynamic Range
  - iii. Harmonic Mixing
- (c) Compare the selectivity characteristics of the Spectrum Analyzer and Wave Analyzer. [6+6+4]
7. (a) Explain the principle and working of a hot wire anemometer  
(b) Discuss the problems encountered while making radioactive measurements? How do you overcome them? [8+8]
8. (a) When a high value of gauge factor desirable, what type of strain gauge should be used and why?  
(b) Explain its working?  
(c) What are its specific advantages? [6+6+4]