Code :R5320204 **R5**

III B.Tech II Semester(R05) Supplementary Examinations, April/May 2011
INSTRUMENTATION
(Electrical & Electronics Engineering)

Time: 3 hours **Max Marks: 80**

Answer any FIVE questions
All questions carry equal marks

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1. Draw the block diagram of the measuring system and explain each stage with their functions.
2. Define aperiodic signals. Write about the mathematical representation of aperiodic signals, with examples and necessary waveforms.
3. How is vertical axis of an oscilloscope deflected? How does this differ from horizontal axis? Explain in detail.
4. (a) Explain time base selector with a neat sketch.
   (b) Write short notes on Digital phase angle meter.
5. (a) Explain the working of a Frequency selective wave analyzer with a neat block diagram.
   (b) What is harmonic distortion? What are the types of the distortion? Discuss them.
6. A piezoelectric transducer has a capacitance of 1000pF and a charge sensitivity of 40×10^{-3} C/m. The connecting cable has a capacitance of 300pF while the oscilloscope used for readout has an input resistance of 1MΩ and a parallel capacitance of 50pF.
   (a) what is the sensitivity of the transducer alone?
   (b) (V/m) of the entire measuring system?
   (c) what is the lowest frequency that can be measured with a 5% amplitude error by the entire system
   (d) what is the value of external shunt capacitance that can be connected in order to extend the range of 5% error down to 10 Hz.?
   (e) What is the high frequency sensitivity, when the external shunt capacitance calculated in
   (f) is connected in the circuit.
7. (a) Explain shaft speed measurements using Stroboscope with a neat sketches.
   (b) What are the advantages and disadvantages of moving magnet type linear velocity transducer?
8. Explain various types of gauges available for low pressure measurement.

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