Bengal Engineering & Science University, Shibpur
B.E. 5th Semester (Final) Examination 2012
ET- 505
Full Marks: 70
Answer any five questions from the following
Time: 3hrs.   Branch: E&TC

1.(a) What is 'standard'? How an international standard comes down to a local standard?

   (b) What are the different types of errors those are present in any type of measurement using electronic equipments and also mention that how they can be minimized?

$$[(1+4)+9]$$

2. (a) Define the following terms related to any measuring instrument:

(i) Accuracy,   (ii) Precision,   (iii) Sensitivity,   (iv) Resolution

   (b) Write a technical note on different types of display those we use for different electronic instruments.

$$[(2×4)+6]$$

3. What is a transducer? How a transducer can be classified? Write down the characteristics of a transducer.

        Mention some of the advantages of semiconductor strain gauge. Prove that for a bonded strain gauge the gauge factor 'K' is related with the Poisson's ratio 'μ' of a strain gauge by $K = 1 + 2 \mu$.

$$[1+1+2+2+8]$$

4 (a). With a neat schematic explain the operation of a flow meter that measures the flow of conducting fluid.

(b) Explain a scheme in which the level of water in a tank of a multistoried building can measure using an 'LVDT'.

(c) Explain with a neat schematic the operation of a digital tachometer.

$$[5+5+4]$$

5. How a dual trace CRO differs from a dual beam CRO? Explain the 'ALT' and 'CHOP' mode of operation in dual trace CRO. What is triggering and its different methods? How different colour displays are available in a CRO? Whether current can be measured by a CRO, if yes then how?

[4+3+3+2+2]

6. Draw the circuit of the ac voltmeter section of an analog multimeter and explain its operation. Also mention the scheme for conversion of an analog multimeter to a digital one. How shunt type ohmmeter differs from a series type and also mention some of its application areas.

[6+4+4]

7. Explain how a signal generator differs from a function generator? With a neat schematic explain the operation of a function generator. Mention some applications of a function generator.

[2+10+2]

8. Write short notes on any two of the following: [2 × 7= 14]
   (i) Platinum resistance thermometer
   (ii) Network Analyzer and its applications.
   (iii) Microprocessor based temperature controller
   (iv) Bourden tube.