DipIETE – ET (OLD SCHEME)

Code: DE11 **Subject: ELECTRONIC INSTRUMENTATION & MEASUREMENTS**
Time: 3 Hours   **Max. Marks: 100**

JUNE 2010

NOTE: There are 9 Questions in all.

- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**

a. In measurement systems, which of the following static characteristics are desirable?

   (A) Accuracy.   **(B)** Sensitivity.
   (C) Reproducibility.   **(D)** All of the above.

b. A reading is recorded as 23.90 C. The reading has _____.

   (A) three significant figures   **(B)** five significant figures
   (C) four significant figures   **(D)** None of the above

c. In a CRT the focusing anode is located _____.

   (A) between pre-accelerating and accelerating anodes
   (B) after accelerating anode
   (C) before pre-accelerating anode
   (D) None of the above

d. A vertical amplifier for a CRO can be designed _____.

   (A) only for a high gain.
   (B) only for a broad bandwidth
   (C) a constant gain times bandwidth product
   (D) All of the above.

e. Maxwell's inductance-capacitance bridge is used for measurement of inductance of_____.

   (A) low Q coils   **(B)** medium Q coils
   (C) high Q coils   **(D)** low and medium Q coils

f. Hall effect transducers can be used for measurement of _____.

   (A) Power   **(B)** Current
   (C) Displacement   **(D)** all of the above

g. In a digital frequency meter, the Schmitt trigger is used for_____.

   (A) converting sinusoidal waveforms into rectangular pulses
   (B) scaling of sinusoidal waveforms
   (C) providing time base
   (D) none of the above

h. The desirable characteristics of a signal source are_____.

    (A) the frequency of the signal should be well known and stable
    (B) the amplitude of a signal source should be controlled from very
        small to relatively large values
    (C) the output signal should be free from distortion
    (D) All of the above.

i. One of the following is an active transducers:

    (A) Strain gauge   **(B)** Selsyn
    (C) photovoltaic cell   **(D)** photo emissive cell.

j. Peizo-electric transducers are_____.

    (A) passive transducers   **(B)** active transducers
    (C) inverse transducers   **(D)** **(B)** and **(C)**

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2   a. What is Standard? Describe briefly the different types of standard used in measurement.   **(8)**

     b. With a suitable block diagram explain the basic digital multimeter.   **(8)**

Q.3   a. Draw the block diagram of the horizontal sweep section of CRO and list different controls of each section.   **(8)**

     b. Describe briefly the operation of sampling oscilloscope.   **(8)**

Q.4   a. Describe how Wien bridge can be used for determining the frequency.   **(8)**

     b. Using block diagram describe the operation of sweep frequency generator.   **(8)**   **(8)**

Q.5   a. Explain the working of hetrodyne wave analyzer with the help of the block diagram.   **(8)**   **(8)**

     b. Explain any one method used for the measurement of flux and flux density.   **(8)**

Q.6   a. Describe how RF power can be measured using Thermal sensor.   **(8)**

     b. Explain how sensitivity & selectivity of a radio receiver be measured.   **(8)**

Q.7   a. Differentiate between active and passive transducers. Explain with the help of suitable examples.   **(8)**

     b. Describe the principle of operation of Hall effect transducers.   **(8)**

Q.8   a. Using a piezoelectric transducer explain how pressure can be measured.   **(8)**

    b. Explain how the frequency range of the counter be extended.   **(8)**

Q.9   a. Describe the operation of counter type Analog to Digital convertor.   **(8)**

    b. Explain how phase and frequency can be measured using CRO .   **(8)**