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

DECEMBER 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.**
- **The answer sheet for the Q.1 will be collected by the invigilator after half an hour of the commencement of the examination.**
- **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. Accuracy is defined as the

(A) Measures of the consistency or reproducibility of the measurement
(B) Closeness with which an instrument reading approaches the true value of the quantity being measured
(C) Smallest measurable input change
(D) Ratio of the change in output signal of an instrument to a change in the input.

b. Maxwell's bridge is very convenient and useful bridge for determination of inductance of coil having.

(A) Low Q factor. **(B)** Medium Q factor.
(C) High Q factor. **(D)** Very low Q factor.

c. The input impedance of a CRO is nearly

(A) Zero. **(B)** 10 ohms.
(C) 100 ohms **(D)** 1M ohms.

d. Phosphor coating for CRTs is provided on

(A) Inside surface only. **(B)** Outside surface only.
(C) Both the surfaces. **(D)** Within the glass.

e. Q-meter operates on the principle of

(A) Series resonance. **(B)** Current resonance.
(C) Self inductance. **(D)** Eddy current.

f. The measurement of very low and very high frequency is invariably done using a frequency counter/timer in the.

(A) Frequency measurement mode only.
(B) Period measurement mode only.
(C) Frequency & period measurements modes respectively.
. **(D)** Period & frequency measurements modes respectively.

g. The voltage resolution for an n-stage ladder network is given as

(A) $V_{REF}/ 2^{n+1}$. **(B)** $V_{REF}/ 2^{n}$.
(C) $V_{REF}/ 2^{n-1}$. **(D)** V_{REF}/n-1.

h. LVDT has an output in the form of

(A) Linear displacement of the core. **(B)** Pulses.
(C) Rotary movement of the core. **(D)** None of the above.

i. A thermistor exhibits

(A) negative temperature coefficient.
(B) positive temperature coefficient.
(C) either negative or positive temperature coefficient.
(D) None of the above.

j. Which one of the following A/D converters is the fastest one

(A) Dual-slope converter.
(B) Successive approximate counter converter.
(C) Parallel converter.
(D) Ramp converter.

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

Q.2 a. Explain the terms Linearity, Accuracy. **(8)**

b. Write a note on calibration and standards. **(8)**

Q.3 a. Explain the working of electronic multimeter with a suitable diagram. **(8)**

b. Give a few applications of Wheatstone's bridge and the limitations of this bridge. **(8)**

Q.4 a. Explain the block diagram of pulse and square wave generator. **(8)**

b. Explain the important features of a CRT. **(8)**

Q.5 a. Explain the horizontal deflection system of a CRO. **(8)**

b. Explain the block diagram of an Audio frequency sine-square signal generator. **(8)**

Q.6 a. Explain how, the flux can be measured by induced emf method. **(8)**

b. Delineate, using suitable sketches, a procedure to measure RF power using Bolometer Bridge. **(8)**

Q.7 a. Explain how displacement can be measured using an inductive transducer. **(8)**

b. Explain the terms Sensitivity, Selectivity, Signal to noise ratio and Fidelity of a receiver. **(8)**

Q.8 a. Explain the working of a Wave Analyser. **(8)**

b. Explain operation of a simple channel Data Acquisition System. **(8)**

Q.9 Write notes on:

(i) Classification of transducers. **(8)**
(ii) Resistance gauge transducers. **(8)**