DipIETE – ET (OLD SCHEME)

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

JUNE 2009

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. Errors committed by a person in the measurement is known as

(A) Instrumental errors. **(B)** Environmental errors.
(C) Random errors. **(D)** Gross errors.

b. The sensitivity of Wheatstone-Bridge depends upon

(A) Galvanometer current sensitivity.
(B) Galvanometer resistance.
(C) Bridge supply voltage.
(D) All the above.

c. In a CRT the highest positive potential is given to

(A) Focusing electrodes. **(B)** Cathode.
(C) Vertical deflection plates. **(D)** Post deflection acceleration anode.

d. The patterns used to measure phase and frequency with a CRO are called

(A) Lissajou's pattern. **(B)** Faraday's pattern.
(C) Ohm's pattern. **(D)** Philip's pattern.

e. Square wave generator is a special type of

(A) Sweep frequency generator. **(B)** Function generator.
(C) Pulse generator. **(D)** Both (B) & (C).

f. The number of comparators needed in a parallel conversion type 8- bit A to D converter is

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(A) 8. **(B)** 16.
(C) 255. **(D)** 256.

g. Zero adjust control is provided in a VOM for

(A) Correcting zero point.
(B) Changing the sensitivity.
(C) Tightening the moving components to the casing.
(D) All of the above.

h. LVDT can be used for

(A) Vibration measurement. **(B)** Angular velocity measurement.
(C) Force measurement in a beam. **(D)** Load measurement in a column.

i. A solar cell is same as the

(A) Photo conductive cell. **(B)** Photovoltaic cell.
(C) Photo emissive cell. **(D)** Phototube.

j. Spectrum analyser is used across the frequency spectrum of a given signal to study the

(A) Current distribution. **(B)** Voltage Distribution.
(C) Energy distribution. **(D)** Power distribution.

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

Q.2 a. Explain the terms (1) Gross error, (2) Systematic error. **(2 × 4)**

b. Describe briefly primary and secondary standards. **(8)**

Q.3 a. Draw the block diagram of a multimeter and explain its operation. **(8)**

b. Derive the relation to calculate the unknown resistance using Wheatstone- Bridge. **(8)**

Q.4 a. Draw the block diagram of an oscilloscope and explain the function of each block. **(8)**

b. Write a note on Digital Storage oscilloscope. **(8)** **(8)**

Q.5 a. Explain how, frequency and phase can be measured using a CRO. **(8)**

b. Explain the working of a function generator with the help of block diagram. **(8)**

Q.6 a. Explain how, frequency range of a counter can be extended. **(8)**

b. Give the method of measuring sensitivity and selectivity of a receiver. **(8)**

Q.7 a. Distinguish between active and passive probes used in CRO's. **(8)**

b. Describe RF power measurement using thermal sensor. **(8)**

Q.8 a. Draw the Sample and Hold circuit and explain its working. **(8)**

b. Explain the circuit of Harmonic Distortion Analyser using Wein Bridge method **(8)**

Q.9 Write **notes** on any **TWO** of the following : **-**

(i) Thermoelectric Transducer. .
(ii) Piezoelectric Transducer.
(iii) Photoelectric Transducer. **(8 x 2 = 16)**