C 61595 (Pages : 2) Name .....

Reg. No .....

FOURTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION APRIL 2014

(2009 Scheme)

AI 09 406—ELECTRONIC INSTRUMENTATION AND MEASUREMENTS

Time : Three Hours Maximum : 70 Marks

Part A

Answer **all** *questions.*
Each question carries 2 *marks.*

1. Define Precision.
2. Name the different standards of measurement.
3. What do you mean by the order of a system ?
4. What is the use of sample and hold circuit in an ADC ?
5. What is the necessity of time delay circuit in a CRO ?

(5 × 2 = 10 marks)

Part B

Answer any **four** *questions.*
Each question carries 5 *marks.*

6. Explain a typical instrumentation system with the help of block diagram.
7. A certain resistor has a voltage drop of 110.2 V and a current of 5.3 A. The uncertainties in the measurement are ± 0.2 V and ± 0.06 A respectively. Calculate the power dissipated in the resistor and the uncertainty in power.
8. Explain the response of a first order system to ramp input.
9. List any *four* applications of DSO.
10. A 6 bit DAC designed with weighted resistor network has a resistance of 320 k Ω in LSB position. The reference voltage is 10 V. The output of resistive network is connected to an Op-amp with a feedback resistance of 5 k Ω . What is the output voltage for a binary input is 111010.
11. Explain the construction of bistable storage CRT.

(4 × 5 = 20 marks)

Turn over

Part C

Module I

12. (a) What are the various types of errors occurring in a measuring system ? Explain.

Or

(b) It is known that the statistics of a well defined voltage signal are given by $x^1 = 8.5$ V and $\sigma^2 = 2.25$ V^2. If a single measurement of voltage signal is made, determine the probability that the measured value indicated will be between 10.0 and 11.5 V.

Module II

13. (a) With block diagram, explain an RF signal generator.

Or

(b) Explain the principle of operation of frequency synthesizer.

Module III

14. (a) With Schematic explain integrating type ADC.

Or

(b) Explain the working of a R – 2R ladder DAC and find expression for output voltage.

Module IV

15. (a) With the help of a diagram describe the principle of operation of strip chart recorder.

Or

(b) With schematic explain the principle of Q–meter.

(4 × 10 = 40 marks)