Roll No.									

B.E. / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV / DEC 2011

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ELECTRONICS AND COMMUNICATION ENGINEERING BRANCH

FIFTH SEMESTER

EC 375 – MEASUREMENTS AND INSTRUMENTATION

(REGULATIONS 2004)

Time: 3 Hours Max. Marks:100

Answer All Questions

PART-A (10 x 2 = 20 Marks)

1) What are the various static characteristics of an instrument?
2) Define accuracy and precision.
3) What is the difference between photo-emissive, photo-conductive and photo-voltaic transducers?
4) Calculate the gage factor S, if a 1.5mm diameter conductor, that is 24mm long changes length by 1mm and diameter by 0.02mm under a compression force.
5) Why we need to use digital RLC meters?
6) Define a data acquisition system.
7) A $3\frac{1}{2}$ digit seven-segment LED display uses diodes that require a 20mA forward current. Calculate the total supply current required.
8) Define data loggers.
9) Why synchronization is required in CRO?
10) State the advantages of digital storage oscilloscope.

PART – B (5 x 16 = 80 Marks)

11. (a)

(i) Classify and explain with examples, the different types of possible errors in measurement. (8)

(ii) In a survey of 10 owners of certain model of car, the following figures for average petrol consumption were reported. (8)

32.4, 39.4, 28.9, 30.0, 33.3, 31.4, 29.5, 30.5, 31.7, 33.0

Calculate:-

(i) Mean Value (ii) Median Value

(iii) Standard Deviation (iv) Variance

12.

(a) Explain the construction, principle and working of a linear voltage differential transformer (LVDT). (16)

(or)

(b) Explain the construction of wire wound strain gauges and derive the expression for the gauge factor. (16)

13.

(a) With neat diagram, explain the operation of Digital Multimeter (DMM)? (16)

(or)

(b) Write short note on the following:

(i) Frequency Counter (8)

(ii) Logic Analyzer (8)

14.

(a) With the neat diagram, explain the working of IEEE 488 bus. (16)

(or)

(b) Draw and explain the block diagram of analog and digital data acquisition system. (16)

15.

(a) Sketch the basic block diagram for a digital storage oscilloscope and explain the operation. (16)

(or)

(b) With a neat diagram, explain the architecture of virtual instrumentation and discuss its application in various fields. (16)