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DG-3187

Third Year B. Sc. (Sem. V) Examination

March / April - 2016

Electronics : Paper - IX

(Basic Instrument & Measurement)

Time : **2** Hours] [Total Marks : **50**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **T. Y. B. Sc. (SEM. 5)**

Name of the Subject :

☛ **Electronics : Paper - 9**

☛ Subject Code No. : **3 1 8 7** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Q. 1 is compulsory.

(3) Figures at extreme right indicate full marks.

(4) Draw figures/diagrams to support your answer.

(5) Assume data, if required.

1 Answer in brief : **14**

(a) What is impedance matching ? Why is it needed ?

(b) What do you mean by error in measurement ?

(c) Define deflection accuracy and precision.

(d) What are static characteristics of an instrument ?

(e) Define Absolute and Relative errors.

(f) Define Resolution and Threshold.

(g) Draw the block diagram of PMMC.

2 (a) Describe the construction and working of a Schering Bridge, also derive its necessary equations. **6+6**

(b) Explain the principle of Capacitive Transducers and explain it in detail.

OR

2 (a) Explain different errors by giving suitable examples; discuss the means adapted to minimize these errors. **6+6**

(b) A 0-150 V voltmeter has a guaranteed accuracy of 1% of full scale reading. The voltage measured by this instrument is 70 V. Calculate the limiting error in percentage.

3 (a) Write a note on classification and selection of transducers. **6+6**

(b) Derive the balance equation of an AC bridge.

OR

3 (a) Explain different types of inputs for an instrumentation system. Also discuss the two methods of correction for these inputs. **6+6**

(b) Three resistances have the following ratings :

$R_1 = 35\ \Omega \pm 5\%,\ R_2 = 75\ \Omega \pm 5\%,\ R_3 = 50\ \Omega \pm 5\%$

Determine the limiting errors in percentage when resistances are connected in series.

4 Write short notes on : (any two) **12**

(a) Strain Gauge

(b) Inductive Transducer

(c) Thermistor characteristics and applications

(d) Desauty Bridge.
