Printed Pages – 3 **IC – 603**

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 3047 **Roll No.** | | | | | | | | | | |

B.Tech.

SIXTH SEMESTER EXAMINATION, 2005-2006

ELECTRONICS MEASUREMENT AND INSTRUMENTATION

Time : 2 Hours *Total Marks : 50*

Note : *(i) Attempt **ALL** questions.*

(ii) In case of numerical problems assume data wherever not provided.

(iii) Be precise in your answer.

1. Attempt *any four* parts of the following : **(3.5x4=14)**

(a) Elucidate three major categories of errors usually encountered during measurement.

(b) A human nerve cell has an open circuit voltage of 60 mV and it can deliver a current of 10 mA through a 5 MΩ load. What is the maximum power available from the cell ?

(c) Explain why Maxwell's inductance capacitance bridge is useful for measurement of inductance of coils having a storage factor between 1 and 10 ?

(d) Give a scheme for the use of ratio transformer bridge for the measurement of phase angle.

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(e) Describe how the frequency can be measured with the use of CRO ?

(f) Calculate the velocity of electron beam in an oscilloscope if the voltage applied to its vertical deflection plates is 1800 V. Also, calculate the cut off frequency if the maximum transit time is 1/4 of a cycle. The length of horizontal plates is 65 mm.

2. Attempt *any four* parts of the following : (3x4=1

(a) Explain working of Simpson's multimeter.

(b) List four advantages of rectifier instruments. What are rectifier ammeters ?

(c) Describe the methods of measurement of power at audio frequencies.

(d) Describe how phase angle measurements are carried out using a vector impedance meter ?

(e) How the range of source follower electronic voltmeter can be extended ?

(f) Describe the operation of a vector voltmeter with the help of a block diagram.

3. Attempt *any two* parts of the following : (6x2=12

(a) Describe the working of wave analysers used in megahertz ranges.

(b) Explain the functioning of a total harmonic distortion meter.

(c) Explain, how the spectra of frequency modulated signals and continuous wave signals are displayed ?

4. Attempt *any two* parts of the following : **(6x2=12)**

(a) Sketch the block diagram of single and multiple period (average) measurement mode of operation using DDAs and DCAs and explain it.

(b) Explain operation of digital energy meter with the help of block diagram.

(c) Mention and explain different methods used for high frequency determination using a digital frequency meter.

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