

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

PAPER ID : 3075

Roll No.

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B.Tech.

THIRD SEMESTER EXAMINATION, 2005-2006

**ELECTRONICS MEASUREMENTS AND
INSTRUMENTATION**

Time : 3 Hours

Total Marks : 100

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

(ii) Each question carry equal marks.

(iii) Be precise in your answer.

1. Attempt *any two* of the following : (10x2=20)
 - (a) Draw a circuit of True RMS meter and explain its working.
 - (b) List out various sources of error in measurement of true values.
 - (c) Give the operating principle and basic circuit of a Digital Frequency Meter set up this meter to measure frequency showing gate control electronics.

2. Attempt *any two* of the following : (10x2=20)
 - (a) Discuss various types of Detectors as used in Bridge - measurement techniques. Write down precautions usually taken while using a Bridge.
 - (b) What is difference between active and passive transduce ? Draw the equivalent circuit of piezo electric crystal and explain its working.

- (c) Find the equivalent parallel-resistance and capacitance that causes Wien Bridge to null with the following component values :

$$R_1 = 3.1 \text{ k}\Omega \quad C_1 = 5.2 \text{ }\mu\text{F}$$

$$R_2 = 25 \text{ k}\Omega \quad R_4 = 100 \text{ k}\Omega$$

$$f = 2.5 \text{ KHz}$$

3. Attempt *any two* of the following : (10x2=20)

- (a) How you measure the time digitally ? Explain the Single and Multiple Period (Average) measurement system.
- (b) How the digital mains frequency meter works ? Explain all the constituent stages and interconnecting schematic diagram of this instrument.
- (c) (i) Why are the ranges in Digital Instruments Overlapped ?
- (ii) How can measurements of parameters be obtained using Microprocessors ?

4. Attempt *any two* of the following : (10x2=20)

- (a) Draw & explain the various waveforms of each stage (block) of a Sampling' Oscilloscope.
- (b) Discuss the spot-wheel method for frequency measurement using a CRO.
- (c) Write a brief note on CRO probes.

5. Attempt *any two* of the following : (10x2=20)

- (a) With the help of a neat block-diagram, develop the theory of a Spectrum Analyser. Indicate the common applications of this Instrument.

- (b) What are Hetrodyne Wave Analyzers ? Explain the theory of a RF Hetrodyne wave-analyser for 0-20MHz RF range. <http://www.uptuonline.com>
- (c) Explain the working of a function generator in detail using blocks, relations and waveforms.

<http://www.onlineQP.com>