Roll No. .....

24226

B. Tech. 5th Semester (Electrical Engg.) I

Examination – December, 2013

ELECTRONIC MEASUREMENT & INSTRUMENTATION

'F' Scheme

Paper : EE-339-F

Time : Three hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complain in this regard, will be entertained after examination.

Note : Attempt ***one*** question from each Section and Question No. 1 is ***compulsory***.

1. (a) What do you mean by vertical sensitivity and vertical deflection factor. 4

   (b) Describe various types of errors in measuring instruments. 4

   (c) How wein bridge is used for frequency measurement ? 4

   (d) Compare digital and Analog transducer 4

   (e) Explain the function of calibration and zeroing network in signal conditioning system 4

SECTION – A

2. (i) Describe the following for CRO circuit 10

(a) Blanking circuit.

(b) Z-axis modulation

(c) Astigmation control

(d) Time base generator

(ii) The X-deflecting Plates in a CRT ax 15mm long and 6mm apart. The centre of the plates is 20 cm from the screen. The accelerating voltage is 2500V. Determine deflection sensitivity and deflection factor of CRT. 10

3. (i) Explain the working of function generator in detail using blocks, relations and wave forms. 10

(ii) What are heterodyne wave analyzers ? Explain the theory of RF heterodyne wave analyzer for 0-20 MH_Z RF range ? 10

SECTION – B

4. (i) How the digital frequency meter works ? Explain all the constituent stages and inter connecting schematic diagram of this instrument. 10

(ii) Determine the % age error in Q measurement introduced by 0.02Ω insertion resistance. The resonating capacitor is 135 PF and oscillator frequency at resonance is 3 MHz. The resistance of coil is 10Ω. 10

5. (i) What is an Universal Counter ? How it can be used to measure frequency and Period of a signal. 10

(ii) Explain Power measurement method in detail. 10

SECTION – C

6. (i) Explain construction and working of nixie tube. Discuss it advantages also. 10

(ii) Describe the Dynamic scattering Process of LCD. Discuss its advantages and disadvantages. 10

7. (i) What is an RVDT ? How does it differ from an LVDT ? Explain how it can be used for measurement of angular displacement. 10

(ii) A strain guage with a guage factor of 4 has a resistance of 500Ω. It is to be used in a test in which the strain to be measured may be as low as 5×10^{-4}. What will be the change in guage resistance. 10

SECTION – D

8. (i) Explain Data acquisition and conversion system with the help of block diagram. 10

(ii) Explain carrier type AC signal conditioning system. 10

9. Explain in detail : $10 \times 2 = 20$

(i) Signal conditioning system

(ii) Discharge devices.