**Exam.Code:0927**
**Sub. Code: 33644**

**2125**
**B.E. (Electronics & Comm. Engineering)**
**Third Semester**
**EC-306: Electronics Measurement and Instrumentation**

**Time allowed: 3 Hours** **Max. Marks: 50**

*NOTE: Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

*x-x-x*

Q.1a) Explain loading effect with an example.
b) "Terms error and uncertainty are different." Comment
c) The deflection sensitivity of a CRO is 0.05 mm/V. What will be the spot movement for an input of 120 V?
d) Sketch the Lissajous figure formed when two sinusoidal signals of equal frequency but 180° phase shift are applied to the CRO.
e) How the principle of total internal reflection used in Fiber optic sensor? (5×2)

## UNIT - I

Q.2a) What are the advantages and disadvantages of null-type instruments? (4)
b) Describe the method of measuring phase difference using Lissajous figures. (3)
c) What is hysteresis? How does it affect transducer performance? (3)

Q.3a) Differentiate between a distortion analyzer and a wave analyzer. (5)
b) A voltmeter reads 90 V when connected across a resistor. If its sensitivity is 40 kΩ/V on a 100 V range, determine the actual voltage and percentage error. (5)

Q.4a) Describe the internal operation of a function generator. How do integrators and comparators help in generating different waveforms? (5)

b) An unbalanced wheat stone bridge has the following resistances with R1=1 KΩ, R2=2.5 KΩ, R3=3.5 KΩ, R4=10 KΩ with a battery voltage of 6V and a galvanometer resistance of Rg=300 Ω. Calculate the current through the galvanometer? (5)

P.T.O.

## UNIT - II

Q.5a) Differentiate between active and passive transducers. Give two examples of each. (5)

b) Explain the construction and working of a strain gauge. How is gauge factor derived? (5)

Q.6a) What is virtual instrument? Compare conventional programming and graphical programming with suitable examples. (5)

b) Write short note on EEG and ECG measurements. (5)

Q.7a) Differentiate between an array and a cluster in LabVIEW with an example. (5)

b) Create a numeric control and change the Label to Design a VI to find whether the given number is prime or not. (5)

*x-x-x*