B. Engg. (Electronics & Comm. Engg.)
3rd Semester
EC-306: Electronics Measurements and Instrumentation

Time allowed: 3 Hours

Max. Marks: 50

NOTE:

Attempt five questions in all, including Q. No. 1 which is compulsory and selecting atleast two questions from each Unit.

-*-*-*-

I. Attempt the following: -

a) Discuss the triggered sweep in a CRO?

b) A voltmeter having sensitivity 2000 Ω/V is used for measurement of voltage across a circuit having a output resistance of 10$k\Omega$. The open circuit voltage is 6V. Find the reading on voltmeter when it is set at 10V scale.

c) Calculate and comment on the resolution of 6bit and 12bit DAC.

d) What is loading effect? How it can be minimized?

e) What are the applications of Function generator? (5×2)

UNIT-I

II. Derive a torque equation for D'Arsonaval Galvanometer and also discuss the dynamic response of the same. A ballistic galvanometer has a resistance of 150Ω and an undamped period of 7.5s. A. steady emf of 3.5 mV produces a deflection of 210 mm. Determine the quantity of electricity discharged from a capacitor if the deflection produced is 750 mm. The relative damping is 0.8. (10)

III. Explain how Wein's bridge car, be used For experimental determination of frequency. Derive the expression for frequency in terms of bridge parameters. Differentiate the Sobering and Anderson's bridge in terms of its merits, demerits and applications. (10)

IV. How phase and frequency are measured with the help of Lissajous Pattern? Explain Draw a Lissajous pattern for equal frequency, equal voltage and 90 degree phase shift. With help of block diagram explain the various working modes of Dual trace CRO. How it is different from a dual beam CRO. (10)

P.T.O.

(2)

UNIT-II

V. Explain the working principle of Strain Gauge. Also establish the relation between the Gauge factor and Poisson's ratio? State the principle of Piezo-electric. Also state the merits and demerits of LVDT.

(10)

VI. Compare virtual instrument with the traditional instrument. Is VI uses the data flow programming? Justify. Create a VI which converts a decimal number to a binary number using for loop.

(10)

VII. Discuss working and applications of differential instrumentation amplifier? Differentiate analog DAS and digital DAS. Enlist the various factors influencing the choice of transducer.

-*-*-*-

(10)