Total No. of Questions :10] *[Total No. of Printed Pages :4*

Roll No .....

EX - 604

B.E. VI Semester

Examination, December 2012

Electronic Instrumentation

Time : Three Hours

Maximum Marks : 100 ***Minimum pass Marks : 35***

Note : 1. Attempt any One Question from each unit.
2. All Questions carry equal marks

UNIT-I

I (a) Describe the function of attenuators in CROs. Explain how are they designed with particular reference to frequency compensation. 10

(b) In electrically deflected CRT has a final anode voltage of 2000V and parallel deflecting plates 1.5 cm long and 5mm apart. If the screen is 50cm from the center of deflecting plates, find (i) beam speed, (ii) the deflection sensitivity, (iii) deflection factor of the tube. 10

OR

2 (a) Derive an expression for vertical deflection of an electronic beam in CRT. 10

(b) An electro statically deflected CRT has plane parallel deflecting plates which are 2.5 cm long and 0.5cm apart and the distance from their center to screen is 20 cm. the

electron beam is accelerated by potential difference of 2500V and is projected centrally between the plates. Calculate the deflecting voltage required to cause the beam to strike a deflecting voltage and find the corresponding deflection of the screen. 10

UNIT-II

3 (a) Explain the function and working of Wagner earthing device. 10

(b) An Owens bridge is used to measure the properties of a sample of a sheet steel at 2 kHz. At balance. Arm ab is test specimen. Arm bc is R_3=100 ohm; arm cd is C_4 =0.1 μF and da is R_2=834ohm in series with C_2= 0.124 μF. Drive balance conditions and calculate the effective impedance of the specimen under test conditions. 10

OR

4 (a) Explain how Wiens bridge can be used for experimental determination of frequency. Drive the expression for frequency in terms of bridge parameters. 10

(b) Describe the working of low voltage Schering bridge. Drive the equations for capacitance and dissipation factor. Draw the phasor diagram of the bridge under condition of balance. 10

UNIT-III

5 (a) Explain the construction and principle of working of a LVDT. Explain how the magnitude & direction of the displacement of core of an LVDT. 10

(b) A thermistor may be assumed to have a linear temperature resistance over a limited temperature range. The variation in resistance is -0.05°C rise of temperature. The thermistor has a resistance of 1000 ohm at 20^0 C. Calculate the value of its resistance at 25^0C. Supposing this thermistor is used in series with a copper coil, what is the value of the resistance of copper coil if the resistance at 20^0C and 25°C in the same for the series connected circuit comprising of coil and the thermistor? The resistance temperature co-efficient of copper may be assumed as 0.004°C. 10

OR

6 (a) Draw the equivalent circuit of piezoelectric transducer. Drive the expression for magnitude of voltage across the load by making simplifying assumptions. 10

(b) What do you understand by multiplexing? Explain A/D and D/A multiplexing in brief. 10

UNIT-IV

7 (a) Explain with neat block diagram the beat frequency oscillator. 10

(b) Describe the working of a sweep frequency generator. What are the sweeper errors? 10

OR

8 (a) Describe the circuit and working of wave analyzers used for audio frequency and MHz frequency ranges. 10

(b) Describe the circuit diagram and working of a laboratory type square wave and pulse generator. 10

UNIT -V

9 (a) Explain with neat block diagram the working principle of Ramp type of DVM. 10

(b) Discuss the various bus standards in detail & compare them. 10

OR

10 (a) Describe the working principle of dual slope type DVM. 10

(b) Discuss with block diagram the working principle of digital pH meter. 10

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