PVP 12

Code: EC8T2

IV B.Tech - II Semester – Regular Examinations - April 2016

ELECTRONIC MEASUREMENTS & INSTRUMENTATION

(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours Max. Marks: 70

Answer any FIVE questions. All questions carry equal marks

1)

a) Explain briefly about Sensitivity and loading effect of a Voltmeter. 7 M

b) The current passing through a resistor of 100±0.2 ohm is 2.00±0.01 A. Using the relationship $P=I^2R$ calculate the limiting error in the computed value of power dissipation. 7 M

2)

a) Discuss square wave and pulse generator with a neat block diagram. 7 M

b) What are elements in AF sine and square wave generator effects the frequency range and amplitude range variations? How the duty cycle of square wave generated can be varied? 7 M

3)

a) Draw and discuss the spectral displays of various modulations using spectrum analyzer. 7 M

b) Explain with the help of block diagram the working of a harmonic distortion analyzer. 7 M

4)

a) What do you mean by "Time-base" in a cathode ray oscilloscope (CRO)? Explain the operation of a circuit suitable for the generation of time base voltage. 7 M

b) A Lissajous pattern on an oscilloscope is stationary and has 10 horizontal tangencies and 2 vertical tangencies. The frequency of horizontal input is 1000Hz. Determine the frequency of vertical input. 7 M

5)

a) Discuss briefly about sampling oscilloscope. 7 M

b) Explain the working of a compensated '' 10: X probe''. 7 M

6)

a) "Bridges can be used for the determination of frequency in terms of values of various Bridge Elements". If this is correct draw the bridge & drive the condition for balance. 7 M

b) A coil with a resistance of 5 Ω is connected to the terminals of the basic Q-meter. Resonance occurs at an oscillator frequency of 4MHz and resonating capacitance of 80 Pf. Calculate the percentage of error introduced by the insertion resistance, $R_{sh} = 0.01\Omega$ 7 M

7)

a) Derive the equation for the gauge factor of a resistive strain gauge in terms of Poisson's ratio. 7 M

b) A thermistor has a resistance of 4kΩ at 0°C and 800Ω at 40°C. Determine the range of resistance to be measured if the temperature rises from 50°C to 100°C. 7 M

8)

a) Explain briefly about Data Acquisition System (DAS) and their applications. 7 M

b) Explain how a load cell is employed to measure static and dynamic forces. 7 M