KUMARAGURU
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Register Number:……..

B.E DEGREE EXAMINATIONS: NOV / DEC 2014

(Regulation 2009)

Fourth Semester

ELECTRONICS AND INSTRUMENTATION ENGINEERING

EIE105: Electronic Instrumentation

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. A dc voltmeter may be used directly to measure
   a) frequency b) polarity
   c) power factor d) power
2. Vector impedance meter gives direct measurement of impedance in terms of
   a) magnitude b) Both magnitude and phase angle
   c) Phase angle d) polarity
3. Sweep generators are used for generating _____frequency
   a) Single b) Dual
   c) Very definite Multiple Range of
4. The spectrum analyzer is used to display
   a) Only the fundamental frequency component of the waveform b) Whole of the frequency spectrum of the waveform
   c) Whole of the time domain signal d) Only the harmonics of the waveform
5. Lissajous pattern can be used to determine
   a) Amplitude of the signal b) Amplitude distortion
   c) Only the phase shift between the two signal d) Frequency and phase relationship between two signal
6. Deflection sensitivity of CRO depends on
   a) Deflection voltage, separation between the plates and plate length b) Only deflection
   c) Only separation between plates d) Electron density.

7. The CMRR of a DMM for a frequency of 50Hz is given as 100 dB. The measured voltage for an input difference voltage of 1mV is

a) 5mV b) 100V

c) 10 V d) 1V

8. In an IEEE-488 bus, an instrument cannot be a

a) Talker only b) Listener only

c) Both Talker and listener only d) Talker, listener and controller simultaneously.

9. Reproducing head of magnetic tape recorders _____ the magnetic pattern

a) stores b) Stores and detects

c) detects d) erases

10. LED is based on the principle of

a) Scattering b) Illumination

c) Absorption d) Transmission

PART B (10 x 2 = 20 Marks)

11. What are the factors in choosing an analog voltmeter?
12. What are the sources of error in Q meter?
13. What are the requirements of signal generator?
14. Define wave analyzer and name its types?
15. What are graticules?
16. Define the technique used in sampling oscilloscope?
17. Define autozeroing.
18. Write short notes on automatic polarity indication.
19. List the sources of electromagnetic interference
20. List out the advantages of X-Y recorders over strip chart recorder.

PART C (5 x 14 = 70 Marks)

21. a) (i) With neat diagram explain the working principle of True RMS meter. (7)

(ii) Explain about the working of vector impedance meter. (7)

(OR)

b) (i) A coil with a resistance of 10 ohm is connected in the direct measurement mode. Resonance occurs when the oscillator frequency is 10 MHz and the resonating capacitor is set at 65 pF. Calculate the percentage error introduced in the calculated value of Q by the insertion of 0.02 ohm resistor (7)

		(ii)	Detail on the working of a multimeter circuit with neat sketch.	(7)
22.	a)	(i)	Sketch the circuit and explain the operation of frequency synthesized sine wave generator.	(10)
		(ii)	Describe briefly any one application of sweep frequency generator.	(4)
			(OR)	
	b)	(i)	With help of block diagram, Explain the working of AF frequency sine and square wave generator.	(10)
		(ii)	Explain any one application of spectrum analyzer with suitable sketch.	(4)
23.	a)	(i)	Explain why time delay is necessary in oscilloscope and also explain the difference between dual beam and dual trace CRO.	(7)
		(ii)	Write an explanatory note on sampling oscilloscope.	(7)
			(OR)	
	b)	(ii)	Explain the operation of a digital CRO with the help of a block diagram and discuss the relationship between sampling rate and bandwidth.	(14)
24.	a)	(i)	Describe the different methods of measuring frequency, phase difference and total count.	(8)
		(ii)	Explain about DPM with the suitable sketch.	(6)
			(OR)	
	b)	(i)	Describe briefly a Digital multi meter with the help of a block diagram.	(7)
		(ii)	Discuss about the microprocessor based to DMM with suitable application.	(7)
25.	a)	(i)	Give the block diagram of Digital Data recording systems.	(7)
		(ii)	Explain the basic elements of a magnetic tape recorder.	(7)
			(OR)	
	b)	(i)	Give the classification of digital displays. Compare LED and LCD display.	(7)
		(ii)	Describe about the multiple earth and earth loops.	(7)

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