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Enrollment No.....



Faculty of Engineering
End Sem (Even) Examination May-2019
EI3CO08 Electronics Measurement and Instrumentation
Programme: B.Tech. Branch/Specialisation: EI

Duration: 3 Hrs.

Maximum Marks: 60

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d.

- Q.1 i. A measurement which on repetition gives same or nearly same result is called 1
(a) Accurate measurement (b) Average measurement
(c) Precise measurement (d) Estimated measurement
- ii. The undesirable characteristics of a measuring system is/are 1
(a) Drift (b) Dead zone
(c) No- linearity (d) All of these
- iii. Under balanced condition, the current flowing through the detector is equal to 1
(a) 1 A
(b) 0 A
(c) Sum of the currents flowing in the adjacent arms
(d) Difference between the current flowing in the adjacent arms
- iv. Maxwell inductance capacitance bridge can be used for _____ 1
(a) Measurement of inductance
(b) Measurement of capacitance and inductance
(c) Measurement of resistance
(d) Measurement of voltage and current
- v. CRO stands for _____ 1
(a) Cathode Ray Oscilloscope
(b) Current Ray Oscillator
(c) Central Resistance Oscillator
(d) Capacitance Resistance Oscilloscope

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- vi. CRO gives the visual representation of time varying signals. The display of the signal is **1**
 (a) One dimensional (b) Two dimensional
 (c) Three dimensional (d) Four dimensional
- vii. In function generator, the output waveform of integrator is **1**
 (a) Sinusoidal (b) Square (c) Triangular (d) Saw-tooth
- viii. Which analyser is used to measure the magnitude of different harmonics of any typical waveform. **1**
 (a) Distortion Analyzer (b) Waveform analyzer
 (c) Transmission analyzer (d) Logic analyzer
- ix. Output of a digital multimeter is _____ **1**
 (a) Mechanical (b) Optical
 (c) Electrical (d) Analog
- x. Digital voltmeters convert _____ **1**
 (a) Analog to digital signal (b) Digital to analog signal
 (c) Current to voltage (d) Resistance to voltage
- Q.2 i. Define: **2**
 (a) Accuracy (b) Precision
- ii. Explain loading effect. **3**
- iii. Define and enlist the different types of error and explain them in brief. **5**
- OR iv. Explain the phenomenon of hysteresis in measurement system. Also explain the terms Dead Zone and threshold. **5**
- Q.3 i. Write short note on electronic multimeter. **2**
 ii. Explain the working of Hay's bridge. Derive the equation for the balanced condition. Also draw the phasor diagram under balanced condition. **8**
- OR iii. Explain the working of Wagner's Earthing device. What are the sources of error in AC bridge measurement. **8**
- Q.4 i. Explain in brief the different types of display devices used for signal display. **3**

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- ii. Describe the Dual trace type and Dual beam type oscilloscope and compare them. **7**
- OR iii. Draw the block diagram of CRO and explain the function of each block. **7**
- Q.5 Attempt any two
- i. Discuss the construction and working principle of spectrum analyzer. **5**
- ii. Explain the working of function generator with the help of block diagram. **5**
- iii. Explain the working of heterodyne wave analyzer. **5**
- Q.6 i. Write advantages of digital instruments over analog instruments. **2**
 ii. What is the importance of sensitivity of digital meter. **3**
 iii. Explain the working of integrating type DVM with block diagram. **5**
- OR iv. Explain the working of successive approximation type digital voltmeter along with its block diagram. **5**

Marking Scheme

EI3CO08 Electronics Measurement and Instrumentation

Q.1	i.	A measurement which on repetition gives same or nearly same result is called (c) Precise measurement	1
	ii.	The undesirable characteristics of a measuring system is/are (d) All of these	1
	iii.	Under balanced condition, the current flowing through the detector is equal to (b) 0 A	1
	iv.	Maxwell inductance capacitance bridge can be used for _____ (a) Measurement of inductance	1
	v.	CRO stands for _____ (a) Cathode Ray Oscilloscope	1
	vi.	CRO gives the visual representation of time varying signals. The display of the signal is (b) Two dimensional	1
	vii.	In function generator, the output waveform of integrator is (c) Triangular	1
	viii.	Which analyser is used to measure the magnitude of different harmonics of any typical waveform. (b) Waveform analyzer	1
	ix.	Output of a digital multimeter is _____ (c) Electrical	1
	x.	Digital voltmeters convert _____ (a) Analog to digital signal	1
Q.2	i.	Define: (a) Accuracy (b) Precision	2
	ii.	Loading effect.	3
	iii.	Different types of error Explanation	5
OR	iv.	Phenomenon of hysteresis in measurement system Dead Zone Threshold.	5

Q.3	i.	Electronic multimeter.	2
	ii.	Working of Hay's bridge Derivation Phasor diagram	8
			3 marks 3 marks
OR	iii.	Working of Wagner's Earthing device	8
Q.4	i.	Types of display devices used for signal display.	3
	ii.	Dual trace type and Dual beam type oscilloscope and compare them.	7
OR	iii.	CRO Block diagram Explanation	7
			3 marks 4 marks
Q.5		Attempt any two	
	i.	Spectrum analyzer Construction Working principle	5
			2.5 marks 2.5 marks
	ii.	Function generator Working Block diagram	5
			3 marks 2 marks
	iii.	Working of heterodyne wave analyzer.	5
Q.6	i.	Advantages of digital instruments over analog instruments.	2
	ii.	Importance of sensitivity of digital meter.	3
	iii.	Working of integrating type DVM Explanation Block diagram.	5
			3 marks 2 marks
OR	iv.	Working of successive approximation type digital voltmeter Explanation Block diagram.	5
			3 marks 2 marks
