C **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 52409

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Second Semester

Electronics and Communication Engineering

15UEC209 - BASIC ELECTRONIC MEASUREMENTS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which of the following types of error can be traced to a defect in the measuring instrument? CO1-R

   (a) Random (b) Systematic (c) Gross (d) none of the above

2. The use of thermocouple meters for ac measurement leads to a scale which is CO2-R

   (a) Linear (b) Square law (c) Logarithmic (d) Exponential

3. In ac bridge measurements, 'Wagner ground' means CO3-R

   (a) a special RC connection to eliminate stray magnetic effects

   (b) a special RC connection to eliminate stray capacitance effects

   (c) an unwanted and unintended ground connection

   (d) a large metal plate buried in ground connected to one corner of bridge

4. In terms of the division on screen, the voltage of the waveform in CRO is_____ CO4- R

   (a) Average voltage (b) RMS voltage (c) Peak to peak voltage (d) Maximum voltage

5. The audio-frequency range of typical AF signal generator is_____ CO5- R

   (a) 20Hz to 200kHz (b) 200Hz to 20kHz

   (c) 20Hz to 20kHz (d) None of the above

PART – B (5 x 3= 15 Marks)

6.	Draw the basic blocks of a generalized instrumentation system.	CO1- R	
7.	Define the different essential torques in indicating instruments.	CO2- R	
8.	Classify the different types of resistance measurement bridge and mention its use?	CO3- R	
9.	Write the significance of transducer?	CO4- R	
10.	What are the types of Spectrum Analyzer and write its uses?	CO5- R	

PART – C (5 x 16= 80 Marks)

11.	(a)	(i) The following readings were taken of a certain length: 1.34, 1.38, 1.56,1.47,1.42,1.44,1.53,1.48,1.40,1.59 mm. Calculate, (a) Arithmetic mean (b) Average deviation (c) standard deviation and (d) variance	CO1-U	(8)
		(ii) Explain the types of Static characteristics of measuring instruments.	CO1-U	(8)
		Or		
	(b)	What is standard? Explain the different types of standards.	CO1-U	(16)
12.	(a)	Describe the construction and working of a PMMC instrument & derive its torque equation with neat sketch..	CO2-U	(16)
		Or		
	(b)	Draw and explain the block diagram of digital multimeter.	CO2- U	(16)
13.	(a)	Quote the procedure of measuring a low resistance with help of suitable bridge. Derive the relation to find unknown resistance	CO3-U	(16)
		Or		
	(b)	Obtain an expression for measurement of unknown inductance using suitable bridge with a neat circuit diagram.	CO3-U	(16)
14.	(a)	With a help of simplified block diagram, explain the construction and operating principle of general purpose Cathode Ray Oscilloscope also list its application.	CO4- U	(16)
		Or		

	(b)	Describe the working of digital storage oscilloscope with the neat sketch and write how it is differ from analog storage oscilloscope.	CO4- U	(16)
15.	(a)	Classify the different types of frequency synthesizer. Draw and explain the block diagram of the frequency synthesized signal generator in details.	CO5- U	(16)
		Or		
	(b)	With neat diagram explain the block diagram of sweep-frequency generator and spectrum analyzer in details	CO5- U	(16)

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