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**Question Paper Code: 52409**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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)

- 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
- 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
- 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
- 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
- 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. CO1-U (8)  
Calculate,
  - (a) Arithmetic mean
  - (b) Average deviation
  - (c) standard deviation and
  - (d) variance(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)

