C

Reg. No. :

Question Paper Code: 52409

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2024

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

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,   CO1-U   (8)
    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

    (ii) Explain the types of Static characteristics of measuring   CO1-U   (8)
    instruments.

    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 &   CO2-U   (16)
    derive its torque equation with neat sketch..

    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   CO3-U   (16)
    suitable bridge. Derive the relation to find unknown resistance

    Or

    (b) Obtain an expression for measurement of unknown inductance using   CO3-U   (16)
    suitable bridge with a neat circuit diagram.

14. (a) With a help of simplified block diagram, explain the construction and   CO4- U   (16)
    operating principle of general purpose Cathode Ray Oscilloscope
    also list its application.

    Or

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(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)

<div align="center">Or</div>

(b) With neat diagram explain the block diagram of sweep-frequency generator and spectrum analyzer in details   CO5- U   (16)

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