

[Total No. of Questions - 9] [Total No. of Printed Pages - 3]  
(2064)

14639

**B. Tech 4th Semester Examination**

**Electronic Measurement and Measuring Instruments (N.S.)**

**EC-222**

**Time : 3 Hours**

**Max. Marks : 100**

*The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.*

**Note :** Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C & D of question paper and all the subparts of the questions in Section E. Use of scientific calculator is permitted.

**SECTION - A**

1. (a) Explain the various types of systematic errors classified in measurement. Discuss the means adopted to minimize these errors. (10)
- (b) Derive the equations for capacitance and dissipation factor of a low voltage Schering Bridge. Draw the phasor diagram for conditions under balance. Discuss the advantages and disadvantages of the bridge. (10)
2. (a) What are the different factors which affect the precision measurement of medium resistances with Wheatstone bridge? Explain how their effects are minimized/eliminated? (10)
- (b) Discuss the followings in brief:
  - (i) Meggar (ii) Static characteristics of instrument (10)

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**SECTION - B**

3. (a) Explain the effect of following on the performance of potential transformers:
- (i) burden of secondary winding circuit (ii) power factor of secondary winding circuit (iii) frequency (12)
- (b) Describe the term, 'total harmonic distortion'. Describe the function of a total harmonic distortion meter. (8)
4. (a) Describe the various characteristics of potential transformer. How will you improve the accuracy of potential transformer? (10)
- (b) Describe the basic circuit of a spectrum analyser. Explain how the spectra of amplitude modulated signals, frequency modulated signals and phase modulated signals is displayed? (10)

**SECTION - C**

5. (a) Derive an expression for vertical deflection of an electron beam in a CRT. (10)
- (b) Describe the different criteria for selection of transducer for a particular application. (10)
6. (a) Explain with diagrams, the bounded and unbounded types of strain gauges. (10)
- (b) Describe the followings:
- (i) Types of alphanumeric displays (ii) sampling oscilloscope (iii) Electronic multimeter (10)

**SECTION - D**

7. Explain the working of torque balancing telemetering system and PCM telemetering system in detail. (20)

8. Discuss the followings:

- (i) Data Acquisition System (ii) Computer Controlled test systems (20)

**SECTION - E**

9. (i) What is the difference between precision and accuracy?  
(ii) What are the different calibration methodologies?  
(iii) What is standard? What are the different types of standards?  
(iv) What are the advantages and disadvantages of Owen's bridge?  
(v) What are the different types of distortions in amplifiers?  
(vi) What are the sources of error in current transformer?  
(vii) What are the advantages and disadvantages of LCD display?  
(viii) What is the difference between analog and digital transducer?  
(ix) What are the advantages and disadvantages of current telemetry system?  
(x) What is difference between XY recorder and magnetic recorder? (2×10=20)