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**Question Paper Code : 31391**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Third Semester

Electrical and Electronics Engineering

EE 2201/EE 33/EI 1202/10133 EE 302/080280016 — MEASUREMENTS AND  
INSTRUMENTATION

(Regulation 2008/2010)

(Common to PTEE 2201 — Measurements and Instrumentation for B.E. (Part-Time)  
Third Semester Electrical and Electronics Engineering — Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define the terms precision and sensitivity.
2. What is the significance of calibration?
3. Write any four types of analog ammeter used for instrumentation.
4. What are the different methods used for frequency measurement in power frequency range?
5. What are the applications of potentiometers?
6. What are the sources of Electromagnetic interference?
7. Distinguish between LED and LCD.
8. What are the functions of data logger?
9. What are the factors to be considered for selection of transducers?
10. Mention any four types of Analog to Digital converter?

PART B — (5 × 16 = 80 marks)

11. (a) Describe the functional elements of an instrument with a block diagram and draw the static and dynamic characteristics. (16)
- Or
- (b) A circuit was tuned for resonance by eight different students and the values of resonant frequency in KHz were recorded as 532, 548, 543, 535, 546, 531, 543 and 536. Calculate
- (i) Arithmetic mean.
  - (ii) Deviation.
  - (iii) Average deviation.
  - (iv) Standard deviation. (16)
12. (a) Describe the construction and working of permanent magnet moving coil instrument. Also derive the expression for deflection. (16)
- Or
- (b) Write short notes on :
- (i) Current transformer. (8)
  - (ii) Weston frequency meter. (8)
13. (a) Explain how the inductance is measured in terms of known capacitance using Maxwell's bridge. Derive the conditions for balance. (16)
- Or
- (b) Explain the following :
- (i) Grounding techniques. (8)
  - (ii) Causes of electromagnetic interferences in measurements. (8)
14. (a) With neat diagram, explain the basic components and working principle of magnetic tape recorder. (16)
- Or
- (b) With the help of the functional block diagram, explain the working principle of digital storage oscilloscope, mention its advantages over analog CRO? (16)
15. (a) Explain the construction and working principle of linear variable differential transformer (LVDT). (16)
- Or
- (b) (i) What is data acquisition system? With generalized block diagram, explain the functions of it. (10)
- (ii) Write short notes on smart sensors. (6)