

4E 4132

Roll No. _____

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4E 4132**B.Tech. IV Semester (Main/Back) Examination, May 2018
Electronics & Comm.****4EC3A Electronic Measurement & Instrumentation****Time : 3 Hours****Maximum Marks : 80
Min. Passing Marks : 26**

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.) Units of quantities used/calculated must be stated clearly.

UNIT - I

1. a) Define the following for Gaussian distribution of data: (8)
- (i) Precision Index
 - (ii) Probable Error
 - (iii) Standard deviation of mean
 - (iv) Standard deviation of Standard deviation
- b) The solution for the unknown resistance for a wheat stone bridge is- (8)

$$P=Q. R/S$$

$$\text{Where - } S = 100 \pm 0.5\% \Omega$$

$$R = 1000 \pm 0.5\% \Omega$$

$$Q = 842 \pm 0.5\% \Omega$$

Determine the magnitude of the unknown resistance and limiting error in Percentage and in ohm for the unknown resistance P.

OR

1. a) Differentiate between accuracy and Precision with the help of suitable examples?. (8)

- b) A set of voltmeter reading was taken by five observers as 99.7, 99.8, 100.0, 100.2 and 100.3. Calculate- (8)
- i) The arithmetic mean
 - ii) The average deviation
 - iii) The standard deviation
 - iv) The variance

Unit - II

2. a) Why is an electronic voltmeter more accurate than an ordinary voltmeter? Draw its block diagram and explain its principle of operation? (8)
- b) What do you mean by the term "Q-factor". Explain the working of Q-meter. (8)

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OR

2. a) Explain the working principle of vector impedance meter? (8)
- b) What do you mean by grounding and shielding? Discuss the techniques to protect the measuring instruments. (8)

UNIT - III

3. a) What is the difference between a CRT and CRO? Draw a neat block diagram of a general purpose CRO and explain functions of each block? (8)
- b) An electrically deflected CRT has a final anode voltage of 2000V and Parallel deflecting Plates 1.5cm long and 5mm apart. If the screen is 50cm from the centre of deflecting Plates, find: (2×4=8)
- (i) Speed of beam
 - (ii) Deflection factor of CRT

OR

3. Explain following in details: (8+8=16)
- a) Multibeam and multi trace oscilloscope
 - b) Dual Storage CRO.

Unit - IV

4. a) Explain the block diagram of frequency Synthesized Signal generators? (8)
- b) Explain the working of a sweep frequency generator. (8)

OR

4. a) Write short note on-

(8+8=16)

(i) Metrodyne wave analyser

(ii) Selective wave analyser.

UNIT - V

5. Write short notes on the following-

(8+8=16)

a) Bourden Tubes

b) LVDT

OR

5. Write short notes on the following-

(8+8=16)

a) Ultrasonic flow meters

b) RTD

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