3E1494

B.Tech. IIIrd Semester (Main/Back) Examination, Feb. - 2011
Electronics & Communication Engineering
3EC4 Electronic Measurements & Instrumentation
Common for Main & Back of 3 EC 4 (Main and Back) and 3BM4
(Old Back only)

Time : 3 Hours

Maximum Marks : 80

Min. Passing Marks : 24

Instructions to Candidates:

*Attempt overall **five** questions, selecting **one** question from **each** unit. Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly.*

Unit - I

1. a) The following 10 observations were recorded when measuring a voltage :31.6, 31.0, 31.7, 31.0, 32.1, 31.9, 31.0, 31.9, 32.5 and 31.8 volt. find

   i) the probable error of one reading.

   ii) the probable error of mean. **(8)**

   b) Define the following for Gaussian distribution of data :

   i) Precision index .

   ii) Probable error

   iii) Standard deviation of mean

   iv) Standard deviation of Standard Deviation. **(8)**

OR

a) A Circuit was tuned for resonance by eight different students and the values of resonant frequency in KHz were recorded as 432, 447, 444, 435, 446, 444, 436 and 441. calculate

   i) Standard deviation

   ii) Variance. **(8)**

b) Define the following with suitable examples.

   i) Precision

   ii) Accuracy

   iii) Repeatability

   iv) Drift related to the instruments. **(8)**

Unit - II

2. a) Explain the block diagram of D.C. voltmeter with Direct coupled Amplifier. **(8)**

   b) Explain the working principle of vector impedance meter with neat sketch. **(8)**

OR

   a) What do you mean by the term 'Q-factor'. Explain the working of Q-meter. **(8)**

   b) Write short notes on RF power and voltage measurements. **(8)**

Unit - III

3. a) Calculate the velocity of the electron beam in an oscilloscope if the voltage applied to its vertical deflection plates is 2200 V. Also calculate the cut off frequency if the maximum transit time is 1/4 of a cycle. The length of horizontal plates is 65 mm. **(8)**

   b) Explain the following terms of CRO :

      i) Blanking circuit

      ii) Astigmation Control. **(8)**

OR

   a) Explain the different types of sweeps used in a CRO. **(8)**

   b) Explain the following terms of CRO :

      i) Z-axis modulation

      ii) Sources of synchronization **(8)**

Unit - IV

4. a) Explain the working of frequency synthesized signal generators with neat sketch. **(8)**

   b) Explain the block diagram of frequency selective wave analyser. **(8)**

OR

   a) Explain the Construction and working of Heterodyne wave analyser. **(8)**

   b) Explain the block diagram of spectrum analyzer and its applications. **(8)**

Unit - V

5. Write short notes on the following :

   a) Seismic Accelerometers. **(8)**

   b) RVDT **(8)**

OR

Write short notes on the following :-

   a) Ultrasonic flow meters **(8)**

   b) Thermocouples. **(8)**

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