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BIEL-009

B.Tech. – VIEP – ELECTRONICS AND COMMUNICATION ENGINEERING (BTECVI)

Term-End Examination

00696

June, 2015

BIEL-009 : ELECTRONIC MEASUREMENT AND INSTRUMENTATION

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt any **seven** questions. Each question carries equal marks. Use of calculator is allowed.*

1. Draw a block diagram representation of a generalized measurement system. Identify the various elements and describe the functions performed by each element /component. *10*

2. (a) Define the dynamic response of a system and distinguish between steady state response and transient response. *5*

   (b) Sketch and explain the response of a first order system when subjected to ramp input signal. Indicate thereon the transient error, steady state error and the time lag. *5*

3. (a) Differentiate between 'accuracy' and 'precision'. 5

(b) A circuit was tuned for resonance by eight different operators and the values of the resonant frequency in kHz were recorded as 5

412, 428, 423, 415, 426, 411, 423 and 416.

Calculate

(i) Arithmetic mean

(ii) Average deviation

(iii) Standard deviation

(iv) Variance

4. (a) What is meant by 'standardization' of a potentiometer ? How is a dc potentiometer standardized ? 5

(b) With relevant diagrams explain how the dc potentiometer can be used to calibrate dc ammeter and dc voltmeter. 5

5. (a) Draw the block diagram of a true r.m.s reading voltmeter and explain its operation. 5

(b) What are its advantages and limitations ? 5

6. (a) What is an LVDT ? Explain the principle of operation of an LVDT. 5

(b) Describe a method of measuring the rotational speed of an electric machine. What are the merits and demerits of the method ? 5

7. (a) Draw the block diagram of a CRO and explain the functions of each block. *5*

(b) Make a comparison between PDM and PCM telemetering systems. *5*

8. Explain with the help of a neat circuit diagram the working of a digital frequency meter. Name the techniques used for the measurement of high frequency. *10*

9. (a) Explain the types of distortions which may occur in a signal. *5*

(b) Draw the block diagram of a wave analyser and explain how it work. Also mention its advantages and disadvantages. *5*

10. Write short notes on any ***two*** of the following : *2×5=10*

(a) Hall Effect Transducers

(b) Digital RLC Meter

(c) Nixie Tube Display