

**B.Tech. - VIEP - ELECTRONICS AND
COMMUNICATION ENGINEERING
(BTECVI)**

Term-End Examination

December, 2015

**BIEL-009 : ELECTRONIC MEASUREMENT AND
INSTRUMENTATION**

Time : 3 hours

Maximum Marks : 70

Note : Attempt seven questions in all. Use of scientific calculator is allowed. Missing data, if any, may be suitably assumed. Draw neat waveforms and circuit diagrams.

1. Define the following terms as applied to the measuring instrument : 5×2=10
- (a) Sensitivity
 - (b) Accuracy
 - (c) Linearity
 - (d) Dead zone
 - (e) Backlash

2. Explain briefly any *two* of the following systematic errors with examples : $2 \times 5 = 10$
- (a) Instrumental Errors
 - (b) Environmental Errors
 - (c) Observational Errors
3. Explain the working principle of a moving iron indicating instrument. Show that this type of instrument can be used for DC and AC measurement. Also indicate the errors involved. 10
4. Draw the circuit diagram and explain the principle of operation of a rectifier type voltmeter employing a bridge rectifier. 10
5. Explain briefly any *two* of the following transducers : $2 \times 5 = 10$
- (a) Self-generating variable inductance transducer
 - (b) Variable reluctance transducer
 - (c) Linear-variable-differential transformer (LVDT)
6. The output of an LVDT is connected to a 4 V voltmeter through an amplifier whose amplification factor is 500. An output of 1.8 mV appears across the terminals of LVDT when the core moves through a distance of 0.6 mm. If the millivoltmeter scale has 100 divisions and the scale can be read to $\frac{1}{4}$ of a division, calculate
- (a) sensitivity of the LVDT, and
 - (b) the resolution of the instrument in mm. 10

7. How are telemetry systems classified ? Discuss briefly the working of a general telemetering system, with the help of a block diagram. 10
8. Write short notes on any *two* of the following : $2 \times 5 = 10$
- (a) Potentiometer Type Recorder
 - (b) Circular Chart Recorders
 - (c) X-Y Recorders
9. Explain the following with neat diagrams : $2 \times 5 = 10$
- (a) Sweep Generator
 - (b) Frequency Synthesizer
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