

**B.TECH. DEGREE EXAMINATION, NOVEMBER 2014****Fifth Semester**

Branch : Applied Electronics and Instrumentation Engineering

**BASIC INSTRUMENTATION (A)**

(Old Scheme—Prior to 2010 Admissions)

[Supplementary/Mercy Chance]

Time : Three Hours

Maximum : 100 Marks

**Part A***Answer all questions.**Each question carries 4 marks.*

1. What is an error calibration curve ? Draw the curve. What is its use ?
2. Define the term "True Value". Why it is not practically possible to know the true value of a quantity ?
3. What is a Wheatstone bridge ? What are its limitations ?
4. What is a vector voltmeter ? Explain briefly.
5. Explain the operation of a direct frequency synthesizer.
6. Draw the basic generating loop of a square-wave type pulse generator and explain briefly.
7. Write short note on segmental displays.
8. Explain briefly the principle of measurement of phase using digital technique.
9. Define the term sensitivity. What is meant by deflection sensitivity of a CRO ?
10. What is the function of a probe in oscilloscopes ? What are its different types ?

(10 × 4 = 40 marks)

**Part B***Answer all questions.**Each full question carries 12 marks.*

11. (a) Explain the basic instrumentation system with a neat sketch. (4 marks)
- (b) What is meant by static characteristics of an instrument ? Give their classification and briefly explain it. (8 marks)

*Or*

12. Explain IEEE standard for measuring systems. Explain the classifications of standards of measurement. Illustrate them with suitable examples.

**Turn over**

13. (a) What is a Schering bridge ? Show the connection of the bridge and draw its phasor diagram. Derive its balancing conditions. (8 marks)

- (b) Draw a high voltage Schering bridge. What are its special features ? (4 marks)

*Or*

14. (a) Define incremental inductance and explain it. How it can be measured ? (8 marks)

- (b) Show that Maxwell's bridge is limited to the measurement of medium Q coils. (4 marks)

15. What is a function generator ? Mention the basic elements of a function generator through a block diagram and give the explanation of each block clearly.

*Or*

16. (a) Explain the construction and working of a RF generator. (8 marks)

- (b) Explain briefly the working of a sweep generator circuit. (4 marks)

17. Draw the block diagram of a potentiometer digital voltmeter and explain the procedure for measuring an unknown voltage using potentiometric DVM.

*Or*

18. (a) Which are the different A/D conversion techniques available ? Explain with neat diagram. (9 marks)

- (b) Write a short note on single period measurement using a neat block diagram. (3 marks)

19. What are DSO's (Digital Storage Oscilloscope) ? Explain their principle of operation with suitable block diagrams, and waveforms.

*Or*

20. What are the main parts of a CRT ? Explain them briefly. Draw and explain the internal structure of a CRT also.

[5 × 12 = 60 marks]