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Reg. No.....

Name.....

M.Sc. DEGREE EXAMINATION, FEBRUARY 2021

Fourth Semester

Faculty of Science

Branch II : Physics—A—Pure Physics

Paper XVI—Special Paper IV—A—ELECTRONIC INSTRUMENTATION

(Non CSS—College Going 2004—2011 Admissions—Special Mercy Chance Examination)

Time : Three Hours

Maximum : 75 Marks

Part A

Answer any six questions.

Each question carries 2 marks.

1. What is meant by zero order system ?
2. Define dead time element.
3. What are the advantages of differential voltmeter ?
4. What is a Q meter used for ?
5. State the fundamental principle of CRO.
6. What are the applications of dual beam CRO ?
7. What is meant by curve plotting ?
8. Explain the basic idea of photo voltaic cell.
9. What are the uses of digital multimeter ?

(6 × 2 = 12 marks)

Part B

Answer any three questions.

Each question carries 5 marks.

10. Describe the fabrication and working of AC voltmeters using rectifiers.
11. Bring out the measurement of frequency using Lissajous figures.
12. Discuss the strip chart recorder construction with principle.
13. Explain the measurement of small resistance using Kelvin's double bridge.
14. Describe the working of digital phase meter.

(3 × 5 = 15 marks)

Turn over

Part C

Answer all questions.

Each question carries 12 marks.

15. (a) Derive the expressions for magnitude and phase of a first order system when subjected to a sinusoidal input signal. Show that the nature of response is the same as that for a unit step input.

Or

- (b) Discuss on the impulse response of first order system. Give an analysis of step response of second order system.

16. (a) Sketch the block diagram of a general purpose CRO and explain the functions of the following controls : (i) intensity ; (ii) synchronization ; (iii) focus ; (iv) horizontal and vertical positioning.

Or

- (b) Write notes on : (i) strip chart recorders ; (ii) circular chart recorders ; and (iii) magnetic recorders.

17. (a) Describe the construction , principle of working and applications of Hall Effect transducers.

Or

- (b) Describe the construction, theory and working of thermocouples. Describe the different types of compensations used and also the methods of measurements of their output voltage.

18. (a) (i) Give an account on harmonic distortion analyzers.

- (ii) Bring out the basic ideas of speech synthesis.

Or

- (b) Write notes on : (i) Digital voltmeter ; (ii) Voltage to frequency conversion ; (iii) digital frequency meter.

(4 × 12 = 48 marks)

Delay

Trigger

Time base