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Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, March 2020

First Degree Programme under CBCSS

Physics

Elective Course

PY 1661.1 – ELECTRONIC INSTRUMENTATION

(2013 Admission Onwards)

Time : 3 Hours Max. Marks : 80

PART – A

Answer **all** questions. Each question carries **1** mark.

1. What is absolute error?
2. How is accuracy expressed?
3. What is a D' Arsonval movement?
4. Define sensitivity of a voltmeter.
5. What is the use of astigmatism control in a CRO panel?
6. What is a dual beam CRO?
7. Define a transducer.

8. What is a bonded strain gauge?

9. What is the use of a sweep generator?

10. What is meant by total harmonic distortion factor?

(10 × 1 = 10 Marks)

PART – B

Answer **any eight** questions. Each question carries **2** marks.

11. What are instrumental errors and how they can be avoided?

12. What are primary standards? Where are they used?

13. Explain how a basic ammeter can be converted in to a multirange ammeter.

14. What is a Chopper type DC amplifier voltmeter?

15. State the advantages of a DVM over an analog meter.

16. List the major components of a CRT.

17. What is the speciality of a storage CRO?

18. What are active transducers?

19. Explain the working of a grid type strain gauge.

20. What is a semiconductor strain gauge?

21. What is a function generator?

22. Draw the circuit diagram of an astable multivibrator.

(8 × 2 = 16 Marks)

PART – C

Answer **any six** questions. Each question carries **4** marks.

23. Calculate the

    (a) arithmetic mean

    (b) deviation of each value and

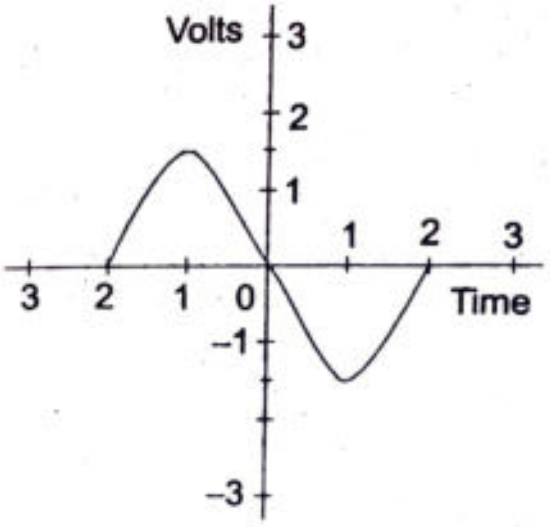
    (c) algebraic sum of the deviations for the following data.

x_1 :	x_2	x_3	x_4	x_5
49.7 :	50.1	50.2	49.6	49.7

24. Explain the various sections of a multimeter with a neat diagram.

25. Explain the operating principle of a ramp type DVM.

26. In an oscilloscope, the time/division control is set to 2 μ *l div* when the waveform shown in the figure is displayed in its screen. Determine the frequency of the signal.



27. Explain the working of an active probe using FET.

28. List out the major operational parameters of an electrical transducer.

29. Explain the working of a photo transistor.

30. Explain the method of wave distortion analysis using resonance bridge.

31. Explain the working of a spectrum analyser.

(6 × 4 = 24 Marks)

PART – D

Answer **any two** questions. Each question carries **15** marks.

32. Explain:

(a) the classification of standards of measurement.

(b) the working of a basic DC voltmeter.

33. Explain the circuit and operation of an integrating type digital voltmeter.

34. Explain the mechanism of electrostatic deflection in an cathode ray tube and derive the equation for the deflection produced in the fluorescent screen.

35. Explain the principle of an instrumentation amplifier.

(2 × 15 = 30 Marks)