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ALL SAINTS COLLEGE LIBRARY TRIVANDRUM

Reg. No. : .....

Name : .....

Sixth Semester B.Sc. Degree Examination, April 2022

First Degree Programme under CBCSS

Physics

Elective Course

PY 1661.1 : ELECTRONIC INSTRUMENTATION

(2018 & 2019 Admission)

Time : 3 Hours Max. Marks : 80

SECTION – A

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

1. Define the terms accuracy and precision.
2. What is gross error?
3. Mention why silicon diodes are preferred as rectifiers in ac voltmeters.
4. What is the advantage of using –ve HV supply in the CRO?
5. What are the applications of oscilloscopes?
6. What is a transducer?
7. What are active transducers? Give an example
8. What is a resistance thermometer?

P.T.O.

9. What is a function generator?

10. What is the purpose of a harmonic analyzer?

(10 × 1 = 10 Marks)

SECTION – B

Answer any **eight,** Each carries **2** marks.

11. What are the limitations of a multirange ammeter? How is it overcome?

12. How can you convert a DC voltmeter into a multirange voltmeter?

13. State the advantages of DVM over an analogue meter.

14. Explain resolution and sensitivity of digital meters.

15. What is the basic operating principle of a mesh-storage CRT?

16. How is the electron beam focused onto a fine spot on the face of a CRT?

17. What is a dual trace oscilloscope?

18. How do we know that a CRO probe is properly compensated or not.

19. Define gauge factor for a strain gauge.

20. Briefly explain the construction of a thermistor

21. What are photo conductive cells?

22. What is the working principle of a Gas-filled phototube?

23. What is a wave analyzer?

24. What are the two ways in which real-time spectrum analyzers can be realized'?

25. What is a sweep generator?

26. What is the cause for harmonic distortion?

(8 × 2 = 16 Marks)

SECTION – C

Answer any **six,** Each carries **4** marks.

27. Explain how a PMMC can be used as an ammeter?

28. Draw and explain an AC differential voltmeter.

29. Compare DC voltmeters with AC voltmeters.

30. Briefly explain the important features of a CRT.

31. Explain a delay line circuit used in a CRO.

32. Compare active probes and passive probes used in oscilloscopes.

33. Explain the principle of operation of a strain gauge.

34. Draw a temperature control circuit using themistor and explain.

35. What are the advantages and limitations of a thermistor?

36. Mention the different architectures used for frequency synthesizers.

37. Explain the working of a wave analyzer.

38. Explain a sweep generator with necessary sketches.

(6 × 4 = 24 Marks)

SECTION – D

Answer any **two,** Each carries **15** marks.

39. Draw and explain a transistor voltmeter.

40. With the help of a block diagram explain the principle of operation a dual slope type DVM.

41. Draw the block diagram of a general purpose CRO and explain.

42. Write the classification of transducers based on the electrical principles involved. Give example for each.

43. Explain in detail the three characteristics of thermistors that make them useful in measurement and control applications.

44. With necessary sketches explain an astable multivibrator.

(2 × 15 = 30 Marks)
