CARMEL COLLEGE OF ARTS, SCIENCE & COMMERCE FOR WOMEN, NUVEM - GOA.

SEMESTER END EXAMINATION, JULY 2021

Semester: IV of B.Sc. Physics (Skill Enhancement Course)
PYS 105 Electrical and Electronic Instrumentation.

Total Marks: 30 Date:15/07/2021 Duration: 2 Hours Total No of pages: 2

Instructions: 1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Symbols have their usual meaning unless specified.
4. Use of nonprogrammable calculator is permitted.
5. Draw neat diagrams wherever necessary.

Q 1) Answer any five from the following. 2 x 5 = 10

a) Ammeter and voltmeter are connected in series and parallel respectively. Why?

b) What is the working principle of electrodynamometer.

c) Explain with a diagram the working principle of Kelvin's bridge.

d) Problems based on Fixed IC Voltage regulators and Adjustable voltage regulators.

e) State the function of a delay line used in the vertical section of an oscilloscope.

f) State the need of a time base generator.

g) State five advantages of digital instruments over analog instruments.

h) What are the applications of an instrumentation amplifier? Draw the diagram of a basic instrumentation amplifer.

Q 2) Answer any four from the following. 5 x 4 = 20

a) What is the sensitivity of voltmeters and ammeter. Describe the working of series type ohmmeter in detail.

b) Explain with a diagram how a multirange ac voltmeter can be constructed using a PMMC. How is current in the RF range measured?

c) State the two conditions that must be met for bridge balance. Draw the circuit diagram and obtain balance conditions for Maxwell's bridge. State the limitation of a Maxwell's bridge.

d) Draw the circuit diagram and explain the working principle of the Transistor series voltage regulators.

e) Draw the basic block diagram of an oscilloscope and state the functions of each block.

f) Describe with a diagram the operation of ramp type DVM. State limitations of a ramp type DVM and how it is overcome.