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

SEMESTER END EXAMINATION, APRIL-MAY 2023

Semester: IV **of** B.Sc **Class:** S.Y.B.Sc
Course Title & Code: Electrical and Electronic Instrumentation PYS 105
Maximum marks: 60 **Date:** 03/05/2023 **Duration:** 2 Hours **Total No of pages:**02

Instructions:

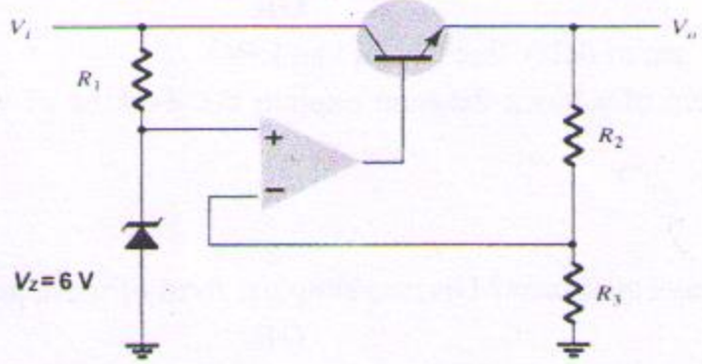
1) *All questions are compulsory, however internal choice is available.*
2) *Figures to the right indicate maximum marks to the question.*
3) *Symbols have their usual meanings unless otherwise stated.*
4) *Draw neat diagram wherever necessary.*
5) *Use of non-programmable calculator is permitted.*

Q1. Answer **any four** of the following **(4 x 2.5 =10)**

(A) Draw a labelled diagram of a PMMC instrument.
(B) What is D'Arsonval movement?
(C) What is a Watt hour meter? Mention the different types of watt-hour meter.
(D) Explain how the problem of low sensitivity associated with electrodynamometer for AC applications can be overcome?
(E) What are AC and DC bridges?
(F) Draw a labelled circuit diagram for Schering bridge.

Q2. Answer **any four** of the following **(4 x 2.5 =10)**

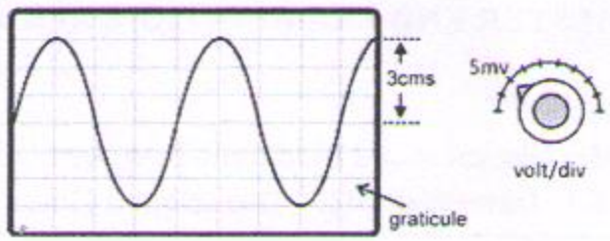
(A) Write the conditions that must be satisfied for the balance of AC bridges?
(B) Draw the circuit diagram of bridge rectifier with LC filter.
(C) Compute the output voltage for the Op-amp series regulator shown below:



In the above circuit $V_i = 10V$, $R_1 = 1k\Omega$, $R_2 = 10\ k\Omega$, $R_3 = 10\ k\Omega$

(D) Draw the circuit diagram of sweep line generator.

(E) Below figure shows the output of sine wave observed a CRO screen and the knob position of volt/div.



From the above figure, measure the peak to peak voltage of the signal.

(F) Other than measurement of voltage of a sine wave signal, what other parameters of the same signal can be measured using CRO?

Q3.

(A) How can a galvanometer be converted into a DC voltmeter? Explain. **(5)**

OR

(B) Explain the working of disc type electrostatic voltmeter with the help of a diagram. **(5)**

(C) Derive an expression for resistance using Kelvin's double bridge. **(5)**

Q4.

(A) Explain the working of transistor shunt voltage regulator. **(5)**

OR

(B) Explain the working of adjustable voltage regulator using LM 317. **(5)**

(C) Draw the circuit diagram of step-down switching regulator and explain it's working. **(5)**

Q5.

(A) Draw the block diagram of CRO and briefly explain each component of the CRO. **(5)**

OR

(B) Discuss the use of delay line circuit in a CRO. **(5)**

(C) With the help of a block diagram explain the working of vertical amplifier in a CRO. **(5)**

Q6.

(A) What are wave analyzers? Discuss simplest form of wave analyzers. **(5)**

OR

(B) Discuss functioning of a digital multimeter with the help of a block diagram. **(5)**

(C) Draw the block diagram of a standard AF sine-square wave generator and explain functioning of each block. **(5)**

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