Department of Electrical Engineering
Assignment
Date: 20/04/2020

Course Details

Course Title: Instrumentation and Measurement **Module:** 6th (BE)
Instructor: **Total Marks:** 30

Student Details

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Q1.	**(a)**	A student mistakenly connects an ammeter in parallel in a circuit. What will happen? Explain briefly.	**Marks 05** **CLO 2**
	(b)	A student mistakenly connects a voltmeter in series in a circuit. What will happen? Explain briefly.	**Marks 05** **CLO 2**
Q2.	**(a)**	Random error cannot be easily reduced in measurements. Justify this statement.	**Marks 05** **CLO 1**
	(b)	What are the different reasons due to which gross error occurs in measurement? Explain briefly.	**Marks 05** **CLO 1**
Q3.	**(a)**	What will happen if a spring in not connected with the coil of a moving coil galvanometer? Explain briefly.	**Marks 05** **CLO 2**
	(b)	A student is performing an experiment in the laboratory during which he finds out that the measuring instrument is giving a Full Scale Deflection for a current of 10 μ A. He wants to measure a voltage of 20V with the help of this measuring instrument. Now, What should be the appropriate value of the resistor to be added with this instrument so that it can measure up to 20V? Moreover, should the resistor be connected in series or parallel with this instrument?	**Marks 05** **CLO 02**

Question NO1:- (a)

Answer:- A Student connect an ammeter Parrallel in a circuit it will Short out The load or damage the ammeter.

Explaination:-

An ammeter has a very low resistance. if Put in Parrallel in a circuit- if may draw a heavy current which can result in burning of moving coil, unless we have Put a extremly low resistance as a Shunt to The ammeter. Due to hight current following Throught The ammeter it will Shor out The load.

Question NO1: (b)

A voltmeter connected in Series a very Small current will flow or no current will flow in a circuit. Due to high

resistance of voltmeter.

Explaination:-

voltmeter has very high resistance to ensure's That its connection do not alter flow of current in circuit. Now if it is connected in Series Than no current will be there in The circuit due to its high resistance.

Question NO 2:- (a)

Random error cannot be easily reduced in measurment because it may be too expensive to control them in each time measurement are made.

Random errors in experimental measurment caused be unknow and unPredictable changes in The experiment measurments.

Question NO 2:- (b)

Gross error are caused by

experimental careless ness or equipment failure. Some other reasons are calculating, measurement, Instruments or meters, are recording data results.

The Best example of These error is a Person or operator reading Pressure gage $1.01\ N/m^2$ as $1.10\ N/m^2$ if may be due to The Person's bad - habit of not properly remembering data at a time of taking down reading, writing and calculating and Presenting The wrong data at a leter time. This may be The reason of Gross error in The reporting data.

Question No 3 :- (a)

if a Spring is not connected with The coil of a moving coil galvonometer Then The Pointer connect back to zero.

Explaination:-

The Spring Provide That restoring force Pushed That Pointer back to zero. it is That hair Springs That make The deflection Proportional to The force. And The force is Proportional to The current. It Permit us to draw an analoge Scales under The Pointer and measure The current.

Question No 3 : (b)

Given Data:

$I_g = 10 \times 10^{-6}$

$V = 20\ V$

Required:

$R = ?$

Solution: $V = I_g (G + R)$

$V/I_g = G + R$

$R = V/I_g - G$

$R = 20/10 \times 10^{-6} - 0$

$R = 2,000000$

$R = 2 \times 10^6 = 2\ Mega\ \Omega$

So resistance 2 Mega Ω mearing 20v and connected in Series.