B.Sc. 6th Semester (Programme) Internal Examination, 2019-20

PHYSICS

Course ID: **Course Code: SP/PHS/604/SEC/4**

Course Title: Basic Instrumentation Skills

Time: 1Hour 15 Minutes Full Marks: 20

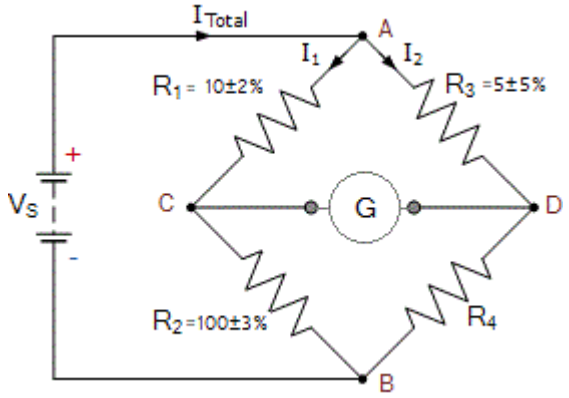
The figures in the margin indicate full marks.
Candidates are required to give their answers in their own words
As far as practicable

1. Answer any **five** questions: $1\times5=5$

(a) What is 'Accuracy' in a measurement?
(b) Discuss 'Random Error'.
(c) Three resistors R_1= 37Ω±5%, R_2=75Ω±5% and R_3=50Ω±5% . Find the Limiting Error in Ω or in % if they are connected in series.
(d) Find maximum proportional error (%) in Power (*P*) consumed by a resistor of resistance *R* when a current *I* is passing through it.
(e) Give an example of Phosphor material used in CRT Screen.
(f) What is the conceptual difference between Precision and Accuracy in a measurement?
(g) How can you convert a voltmeter into an ammeter?
(h) What is the purpose of Electrodynamo meter?
(i) Discuss the basic principle of measuring DC voltage and DC current.

2. Answer any **one** question: $5\times1=5$

(a) The arms of a Wheatstone bridge are shown. Under balanced condition of the bridge, find the tolerance value of R_4. [5]



(b) Provide a block diagram of an Electronic Voltmeter. **OR** an AC millivoltmeter. [5]

(c) Describe a PMMC type Instrument with the following points: [5]
i) Construction and working
ii) Advantage and disadvantage
iii) Source of errors
iv) Application area

(d) What is DSO? Describe with a clear block diagram. [1+4]

3. Answer any **one** question: $10\times1=10$

(a) Describe construction, working and application of a **CRT** with a neat diagram and significance of each component. [10]
(b) Describe the block diagram of a **Low Frequency Signal Generator** with diagram. Mention the working of each part in brief. [10]
(c) Describe the working of a **Q-meter** OR a **Digital Voltmeter** with block diagram. [10]