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SEAT No. \_\_\_\_\_

No. of Printed Pages : 2

## SARDAR PATEL UNIVERSITY

B. Sc. (3<sup>rd</sup> Semester) Examination - 2018  
US03CINS01 (Measurements and Indicators)

Day and Date: Tuesday, 20/11/2018

Time: 02:00 pm to 05:00 pm

Maximum Marks: 70

SC

## Que 1 Objective Type Questions.

[10]

- 1 The sensitivity of voltmeter is defined as \_\_\_\_\_.
  - a)  $I/\Omega$
  - b)  $\Omega/I$
  - c)  $\Omega/V$
  - d)  $V/\Omega$
- 2 The transistor voltmeter (TVM) is used to measure \_\_\_\_\_.
  - a) DC  $\mu V$
  - b) AC  $\mu V$
  - c) DC mV
  - d) AC mV
- 3 A diode used as rectifier in AC voltmeter should have \_\_\_\_\_.
  - a) High forward current and high reverse current
  - b) Low forward current and high reverse current
  - c) Low forward current and low reverse current
  - d) High forward current and low reverse current
- 4 The internal resistance of an ohmmeter can be estimated from \_\_\_\_\_.
  - a) 0 deflection
  - b) Full scale deflection
  - c) Quarter deflection
  - d) Half scale deflection
- 5 The field strength meter is used to measure \_\_\_\_\_.
  - a) Radiation intensity
  - b) Voltage
  - c) Frequency
  - d) Current
- 6 The stroboscope is used to measure \_\_\_\_\_.
  - a) Speed
  - b) Current
  - c) Voltage
  - d) Temperature
- 7 A D' Arsonval movement is \_\_\_\_\_.
  - a) Taut band
  - b) PMMC
  - c) Electrodynamicometer
  - d) Moving iron type
- 8 A PMMC uses \_\_\_\_\_.
  - a) Taut band
  - b) Moving coil
  - c) Electrodynamicometer
  - d) Moving iron type
- 9 A taut band movement uses a/an \_\_\_\_\_.
  - a) Ribbon
  - b) Moving coil
  - c) Moving iron type
  - d) Electrodynamicometer
- 10 To select the range, a multirange ammeter uses a \_\_\_\_\_.
  - a) Make before break type switch
  - b) Double pole double throw switch
  - c) Single pole double throw switch
  - d) Simple switch

①

(P.T.O)

Que 2 Short Questions (Attempt Any Ten)

[20]

- 1 Explain Ayrton shunt with necessary diagram.
- 2 Explain calibration of the shunt type ohmmeter.
- 3 Discuss calibration of DC instrument.
- 4 What is Multimeter?
- 5 Explain briefly automatic bridge.
- 6 Write on analog pH meter.
- 7 What is telemetry? Draw diagram of general telemetry system.
- 8 Enlist types of instruments mainly used as ammeters and voltmeters.
- 9 Explain D'Arsonval principle with necessary diagram.
- 10 A moving coil instrument has number of turns 100, width of coil 20 mm, depth of coil 30 mm and flux density in the gap  $0.1 \text{ Wb/m}^2$ . Calculate the deflecting torque when carrying a current of 10 mA. Also calculate the deflection, if the control spring constant is  $2 \times 10^{-6} \text{ Nm/degree}$ .
- 11 A 1 mA meter movement with an internal resistance of  $100 \Omega$  is to be converted into a 0-100 mA. Calculate the value of shunt resistance required.
- 12 Design a multirange ammeter with range of 0-1 A, 0-5 A and 0-10 A employing individual shunt in each D'Arsonval movement with an internal resistance of  $500 \Omega$  and a full scale deflection of 10 mA is available.

Que 3 [A] With necessary diagram, write a note on taut band instrument. [05]

[B] Give an account of gas discharge plasma displays. [05]

OR

Que 3 [A] Write a detailed note on electrodyname. [10]

Que 4 [A] Give an account of differential voltmeter. [05]

[B] What is loading? Explain transistor voltmeter. [05]

OR

Que 4 [A] Write a note on solid state voltmeter. [05]

[B] What do you mean by multirange voltmeter? Give an account of extending voltmeter ranges. [05]

Que 5 [A] Explain true RMS voltmeter. [05]

[B] Write a note on peak responding voltmeter. [05]

OR

Que 5 [A] Write a note on AC voltmeter using rectifiers. [05]

[B] Write a note on series type ohmmeter. [05]

Que 6 [A] Give an account of output power meter. [05]

[B] Write a detailed note on stroboscope. [05]

OR

Que 6 [A] Discuss field strength meter in detail. [05]

[B] Explain RX meter in detail. [05]

