

SARDAR PATEL UNIVERSITY
B.Sc. (I Semester) (NC) Examination
INSTRUMENTATION (VOC.)
Monday, 18th April 2016
2.30 am - 4.30 pm
US01CINV01 : Basic Electronics Instruments

Total Marks: 70

Q-1 Choose the correct answer from given. **[10]**

1. _____ is negative co-efficient of a temperature.
 (A) LDR (C) both (A) & (B)
 (B) Thermistor (D) none of above
2. Capacitive reactance passes _____ signal and block _____ signal.
 (A) DC, AC (C) AC, DC
 (B) Low voltage ac, high voltage dc (D) None of above
3. A resistor has color band sequence is Gray, Blue, Gold and Silver, _____ is the resistance value of resistor.
 (A) $8.6\Omega \pm 10\%$ (C) $8.7\Omega \pm 5\%$
 (B) $86\Omega \pm 10\%$ (D) None of above
4. Limitation of Ayrton shunt is as the range increases the meter resistance _____.
 (A) increase (C) constant
 (B) decrease (D) None of above
5. _____ Damping is a considered as best damping.
 (A) Over (C) Critical
 (B) Under (D) None of above
6. _____ Resistor is used for high wattage rating.
 (A) Thin film (C) Thick film
 (B) Wire wound (D) None of above
7. _____ Coil is used in smoothing the pulse rating current produce by rectifier in power supply.
 (A) Fitter chock (C) Audio frequency chock
 (B) Radio frequency chock (D) None of above
8. As distance between two plates of a capacitor is increased, its capacitance value is _____.
 (A) increased (C) constant
 (B) decreased (D) None of above
9. Sensitivity of DC current meter depends on _____.
 (A) Resistance of coil (C) Inductance of coil
 (B) Applied voltage (D) None of above
10. Torque produced in the coil of PMMC is proportional to _____.
 (A) Resistance of coil (C) Shunt resistance
 (B) Coil area (D) None of above

Q-2 Short answer type question. (attempt any TEN) **[20]**

1. List application of variable resistance.
2. Define active and passive components.
3. Briefly explain thermistors.
4. Define Mutual induction.
5. Draw the variable capacitor symbol.
 1. Gang capacitor, 2. Trimmer capacitor.
6. Briefly explain series connected inductor.

7. Which factors depends on motion of the moving coil in a magnetic field?
8. Write uses of moving coil galvanometer.
9. Write an expression for torque produced by the coil and explain it.
10. Draw the circuit of multiage voltmeter.
11. Define voltmeter sensitivity.
12. Briefly explain Digital multimeter.

- Q-3 (A) Explain Wheatstone bridge method and derive an expression for unknown resistance. [5]
 (B) Discuss series and parallel connected resistor. [5]

OR

- Q-3 (A) List fixed types resistor and explain any two with necessary figure. [5]
 (B) Explain voltmeter-ammeter method for resistance measurement. [5]

- Q-4 (A) What is capacitance of capacitor?
 And Explain : 1. Paper capacitor and
 2. Mica capacitor in detail. [7]
 (B) Explain capacitive reactance. [3]

OR

- Q-4 (A) Enlist fixed type an inductor coil and explain it with necessary figure. [7]
 (B) Explain chokes coil. [3]

- Q-5 (A) Discuss construction and working of suspended type galvanometer. [6]
 (B) Discuss Damping mechanism used in PMMC movements. [4]

OR

- Q-5 (A) Discuss Deflection Torque and Dynamic behavior of galvanometer. [6]
 (B) Discuss Temperature compensation in PMMC movements. [4]

- Q-6 (A) Explain how the PMMC galvanometer is converted in to Voltmeter. [5]
 (B) A PMMC movement with $100\ \Omega$ coil resistance and 1 mA full scale deflection current is to be converted in to a multirange voltmeter with voltage ranges of $0-10\text{ V}$, $0-50\text{ V}$, and $0-250\text{ V}$ and $0-500\text{ V}$. calculate the resistance of multiplier. [5]

OR

- Q-6 (A) Explain how the PMMC galvanometer is converted in to an ammeter. [5]
 (B) A 1 mA PMMC movement with an internal resistance of $100\ \Omega$ is converted In to $0-100\text{ mA}$ ammeter. Calculate the value of shunt resistance. [5]

$$X = X = X$$

(2)