

**SARDAR PATEL UNIVERSITY****B.Sc. (1<sup>st</sup> Sem) Examination - 2016 [CBCS]**Saturday, 19<sup>th</sup> November

10:00 am - 12:00 noon

**US01CINV01 (Instrumentation - Vocational)**

Basic Electronic Instruments

**Maximum Marks: 70**

**Que 1 Each question below gives a multiple choice of answers. Choose the most appropriate [10] one.**

- 1 \_\_\_\_\_ : Resistance of the Resistor having Colour Bands - Red, Red, Red.
  - a) 0.22 k $\Omega$
  - b) 2.2 k $\Omega$
  - c) 22 k $\Omega$
  - d) None of these
- 2 \_\_\_\_\_ : Used for Measurement of Medium Range Resistance.
  - a) Voltmeter - Ammeter Method
  - b) Substitution Method
  - c) Wheatstone Bridge
  - d) None of these
- 3 Inductor Passes \_\_\_\_\_ Signal and Blocks \_\_\_\_\_ Signals.
  - a) DC, AC
  - b) AC, DC
  - c) DC, DC
  - d) None of these
- 4 \_\_\_\_\_ : Converts One Form Of Energy into Another Form.
  - a) Transformer
  - b) Transducer
  - c) Transistor
  - d) None of these
- 5 In Ayrton shunt, as the Range Increases, the Meter Resistance \_\_\_\_\_.
  - a) Increases
  - b) Decreases
  - c) Remain Constant
  - d) None of these
- 6 Capacitance of a Capacitor Depends On \_\_\_\_\_.
  - a) Cross - Sectional Area of Plates
  - b) Thickness of Insulator
  - c) Both a) and b)
  - d) None of these
- 7 In LDR, as the Light Intensity Increases, its Resistance \_\_\_\_\_.
  - a) Increases
  - b) Constant
  - c) Decreases
  - d) None of these
- 8 \_\_\_\_\_ : Best Damping.
  - a) Critical
  - b) Over
  - c) Under
  - d) None of these
- 9 DC Current Meter Sensitivity Depends on \_\_\_\_\_.
  - a) Inductance of Coil
  - b) Temperature
  - c) Resistance of Coil
  - d) None of these
- 10 \_\_\_\_\_ Transformer is Normally Used in Power Supply.
  - a) Air Core
  - b) Ferrite Core
  - c) Iron Core
  - d) None of these

**Que 2 Short Questions (Attempt any TEN)**

**[20]**

- 1 What do you mean by Active and Passive Components?
- 2 Write an Expression for Torque produced by the Coil. Explain it Briefly.
- 3 Why Less Amount of Eddy Current is Observed in Ferrite Core Transformer?
- 4 Draw Circuit Diagram of Multirange Voltmeter.
- 5 Enlist Factors that Determines the Motion of Coil in Magnetic Field.
- 6 Explain Ayrton Shunt Method for Ammeter.
- 7 Define Mutual Inductance. What is its Unit?
- 8 What is the Effect of Temperature on Galvanometer?
- 9 Enlist any Two Applications of Variable Resistor.
- 10 What do you mean by Voltmeter Sensitivity?
- 11 What is Capacitive Reactance? What is its Unit?
- 12 Explain Parallel Connection of Resistor with Diagram.

**Que 3 [A] What is the Use of Resistor in Circuit? Explain any Two Types of Resistors.**

**[05]**

**[B] With Necessary Diagram, Explain Wheatstone Bridge.**

**[05]**

**OR**

**[A] Give an Account of Thermistor. Enlist its Applications.**

**[05]**

**[B] Discuss Light Dependent Resistor (LDR). State its Uses.**

**[05]**

**Que 4 [A] What is Capacitor? Explain It in Detail. What are the Applications of Capacitor?**

**[10]**

**OR**

**[A] Write Detailed Note On Inductor. What is its Unit? State its Uses.**

**[10]**

**Que 5 [A] Give an Account of Suspension Galvanometer.**

**[05]**

**[B] Explain Pivoted Coil Type Galvanometer With Necessary Diagram**

**[05]**

**OR**

**[A] What is Temperature Compensation? Explain Temperature Compensation in PMMC Movement.**

**[05]**

**[B] Discuss Damping Mechanism Used in PMMC Movements.**

**[05]**

**Que 6 [A] With necessary Circuit Diagram, Explain How Galvanometer is Converted into Voltmeter.**

**[05]**

**[B] Design an Ayrton Shunt to provide an Ammeter with Current Range of 1A, 5A and 10A. A d'Arsonval Movement with an Internal Resistance  $50 \Omega$  and Full Scale Deflection Current of 1mA. Find Resistances Associated ( $R_a$ ,  $R_b$  and  $R_c$ ) with the Circuit.**

**[05]**

**OR**

**[A] With necessary Circuit Diagram, Explain How Galvanometer is Converted into Ammeter.**

**[05]**

**[B] A PMMC Movement with  $100 \Omega$  Coil Resistance and 1 mA Full Scale Deflection Current is to be Converted into a Multirange Voltmeter with Voltage Ranges of 0-10 V, 0-50V, 0-250 V and 0-500 V. Calculate Resistance of Multiplier.**

**[05]**