# SHIKSHA CLASSES

**Subject : Physics** **Question Paper** **Total Marks :20**

**Class : XI** **11 : Electric Current Through Conductors** **Time : 1 Hour**

## SECTION - A

**Q.1 : Choose the correct option :** 4

i) A current of 1.6 A is passed through an electric lamp for half a minute. If the charge on the electron is $1.6 \times 10^{-19}$ C, the number of electrons passing through it is ------.

a) $1 \times 10^{19}$ b) $1.5 \times 10^{20}$

c) $3 \times 10^{19}$ d) $3 \times 10^{20}$

ii) Which of the following is an ohmic conductor?

a) transistor b) vacuum tube c ) electrolyte d) nichrome wire

iii) Masses of three pieces of wires made of the same metal are in the ratio 1 : 3 : 5 and their lengths are in the ratio 5 : 3 : 1. The ratios of their resistances are

a) 1 : 3 : 5 b) 5 : 3 : 1

c) 1 : 15 : 125 d) 125 : 15 : 1

iv) You are given four bulbs of 25 W, 40 W, 60 W, and 100 W of power, all operating at 230 V. Which of them has the lowest resistance?

a) 25 W b) 40 W

c) 60 W d) 100 W

**Q.2 : Answer the following :** 2

i) Define temperature coefficient of resistivity.

ii) Define current.

## SECTION B

**: Answer the following : (ANY 2)** 4

**Q.3 :** Derive relation between current density and drift velocity.

**Q.4 :** How much work is done in moving a charge of 1.2 C from a point at 100 V to 180 V?

**Q.5 :** Explain variation of resistivity with temperature.

## SECTION C

**: Answer the following : (ANY 2)** 6

**Q.6 :** Explain working of a circuit when connected to emf device.

**Q.7 :** A metal wire of specific resistance $64 \times 10^{-6}\ \Omega$ m and length 1.98 cm has a resistance of $7\Omega$. Find its radius.

**Q.8 :** Derive expression for potential energy when a charge flows through an external resistance in a circuit.

## SECTION D

**: Answer the following : (ANY 1)** 4

**Q.9 :** A potential difference of 200 V is maintained across a conductor and current flowing through it is 2A. Find ;

i) resistance and

ii) charge flowing through resistance for 15 seconds.

iii) the number of electrons flowing through the conductor in 15 seconds.

**Q.10 :** Explain parallel combination of resistors.

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