



XI-SCI : Physics
Electric Current Through Conductors,

DATE:

TIME: 1 hour 30
minutes

MARKS: 25

SEAT NO:

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Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer.

(4)

1. Which of the following is an ohmic conductor?
A) Transistor B) Vacuum tube
C) Electrolyte D) Nichrome wire
2. Electric current has both magnitude and direction. Which of the following statements is correct?
A) It is vector quantity as it has both magnitude and direction
B) It is scalar quantity as it does not follow laws of vector addition
C) It can act both as a vector and scalar
D) All are correct
3. Masses of three pieces of wire made of the same metal are in the ratio 1:3:5 and their lengths are in the ratio 5:3:1 The ratio of their resistances are
A) 1:3:5 B) 5:3:1
C) 1:15:125 D) 125:15:1
4. The wire of length L and resistance R is stretched so that its radius of cross-section is halved? What is its new resistance?
A) 5 R B) 8 R
C) 4 R D) 16 R

Q.2 Answer the following.

(3)

1. Define : Resistivity/Specific Resistance.
2. Define : Current Electricity
3. Define : Ampere.

Section B
Attempt any Four

- Q.3 State Ohm's Law. Draw I-V curve for it. **(2)**
- Q.4 What do you mean by cells in series? What are its advantages? **(2)**
- Q.5 What is rheostat? Why we use it? **(2)**
- Q.6 State advantages & disadvantages of cells in parallel.. **(2)**
- Q.7 A battery of emf 12 V and internal resistance 3Ω is connected to a resistor. If the current in the circuit is 0.5A **(2)**
a) Calculate resistance of resistor
b) Calculate terminal voltage of the battery when the circuit is closed

- Q.8 What is the resistance of one of the rails of a railway track 20 km long at 20°C? The cross section area of rail is 25 cm² and the rail is made of steel having resistivity at 20° C as $6 \times 10^{-8} \Omega\text{m}$ **(2)**

Section C
Attempt any Two

- Q.9 Give relation between EMF & terminal PD. **(3)**
- Q.10 Explain primary cells, secondary cells and fuel cells. **(3)**
- Q.11 Explain origin of Ohm's Law. **(3)**

Section D
Attempt any One

- Q.12 Express current in the limit of ratio of charge and time **(4)**
A battery after a long use has an emf 24V and an internal resistance 380 Ω . Calculate the maximum current drawn from the battery? Can this battery drive starting motor of car?
- Q.13 A metallic wire is stretched so that it becomes 0.3% longer. What is the percentage increase in **(4)**
(a) Resistance (b) Resistivity.