

**Model Question Paper**  
**Current Electricity - Part I**

12th Standard

**Physics**

Reg.No. : 

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I. Answer all the Questions.  
II. Use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 70

**Section-A**

5 x 1 = 5

- 1) A charge of 60 C passes through an electric lamp in 2 minutes. Then the current in the lamp is  
(a) 30 A (b) 1 A (c) 0.5 A (d) 5 A
- 2) The material through which electric charge can flow easily is  
(a) quartz (b) mica (c) germanium (d) copper
- 3) The current flowing in a conductor is proportional to  
(a) drift velocity (b) 1/area of cross section (c) 1/no of electrons (d) square of area of cross section
- 4) A toaster operating at 240V has a resistance of  $120\Omega$ . The power is  
(a) 400 W (b) 2 W (c) 480 W (d) 240 W
- 5) If the length of a copper wire has a certain resistance R, then on doubling the length its specific resistance  
(a) will be doubled (b) will become 1/4th (c) will become 4 times (d) will remain the same

**Section-B**

5 x 3 = 15

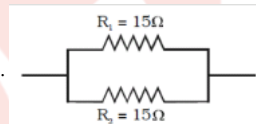
- 6) What is current electricity?
- 7) What are free electrons?
- 8) What is meant by electromotive force?
- 9) Define electric current
- 10) Define drift velocity.

**Section-C**

5 x 5 = 25

11)

From the following network find the effective resistance between A and B.



- 12) In Wheatstone's bridge, the values of P, Q and R are  $4\Omega$ ,  $8\Omega$  and  $6\Omega$  respectively.  $24\Omega$  resistor is connected in the place of "S". Determine the value of additional resistance to be connected parallel to  $24\Omega$  so as to balance the bridge.
- 13) Three resistors of resistances  $5\Omega$ ,  $3\Omega$  and  $2\Omega$  respectively are connected in series with 10V supply. Find the effective resistance of the combination and the voltage drop across each resistor.
- 14) In a metre bridge, the balancing length for a  $10\Omega$  resistance in left gap is 51.8 cm. Find the unknown resistance and specific resistance of a wire of length 108 cm and radius 0.2 mm.
- 15) The resistance of a conductor is  $4\Omega$  at  $24^\circ\text{C}$  and  $5\Omega$  at  $80^\circ\text{C}$ . Calculate the temperature coefficient of resistance of the material. Also find the resistance at  $0^\circ\text{C}$ .
- 16) Derive an expression for the effective resistance of a series with a neat diagram.
- 17) Derive an expression for the effective resistance of resistors in parallel network with a neat diagram.
- 18) What are the applications of superconductors?
- 19) Explain the construction and working of Leclanche with a neat sketch.
- 20) Explain the construction and working of Lead acid accumulator with a neat diagram.

5 x 5 = 25

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