SUBJECT:- PHYSICS   CLASS:- XTH   DATE:- 29/04/XXI

SUBJECT TEACHER:- MR. NEEL NIRANJAN

CHAPTER 1. (ELECTRICITY) (BASED ON NCERT PATTERN)

Q1 What is (a) the highest, (b) the lowest total resistance that can be secured by combinations of four coils of resistance 4 Ω , 8 Ω , 12 Ω , 24 Ω?

Ans. (a) The highest resistance is when the resistances are connected in series:

R_1 = 4 ohm R_2 = 8 ohm

R_3 = 12 ohm R_4 = 24 ohm

Total resistance in series = R_1 + R_2 + R_3 + R_4

= 4 + 8 + 12 + 24

= 48 ohm, Thus, highest resistance is 48 ohm.

(b) The lowest resistance is when the resistances are connected in parallel

Total resistance in parallel

= $1/R_1$ + $1/R_2$ + $1/R_3$ + $1/R_4$

$1/R$ = 1/2 + 1/8 + 1/12 + 1/24

= 12/24

$1/R$ = 1/2 ohm, R = 2 ohm,   Thus, lowest resistance is 2 ohm.

Q2. Why does the cord of an electric heater no, glow while the heating element does?

Ans. The resistance of cord is extremely small as compared to that of heating element, so the heat produced in cord is less as compared to heating element. So the heating element begins to glow but cord does not glow.

Q3. What determines the rate at which energy is delivered by a current?

Ans. Electrical power determines the rate at which the energy is delivered by a current.