

# JK PUBLIC SCHOOL KUNJWANI

## Worksheet of Physics

1. Question: Two bulbs have ratings 100 W, 220 V and 60 W, 220 V respectively. Which one has a greater resistance?
2. Question: A torch bulb has a resistance of  $1 \Omega$  when cold. It draws a current of 0.2 A from a source of 2 V and glows. Calculate
  - (i) the resistance of the bulb when glowing and
  - (ii) explain the reason for the difference in resistance.
3. Question: Calculate the resistance of 1 km long copper wire of radius 1 mm. (Resistivity of copper =  $1.72 \times 10^{-8}$ )
4. Question: When a potential difference of 2 V is applied across the ends of a wire of 5 m length, a current of 1 A is found to flow through it. Calculate:
  - (i) the resistance per unit length of the wire
  - (ii) the resistance of 2 m length of this wire
  - (iii) the resistance across the ends of the wire if it is doubled on itself.
5. How much work is done in moving 4 C across two point having pd. 10 v
6. How much energy is given to each coulomb of charge passing through a 9 v battery?
7. 100 j of work is done in moving a charge of 5 C from one terminal of battery to another. What is the potential difference of battery?
8. If  $4 \times 10^{-3}$  J of work is done in moving a particle carrying a charge of  $16 \times 10^{-6}$  C from infinity to point P. What will be the potential at a point?
9. Calculate the current and resistance of a 100 W ,200V electric bulb.
10. Calculate the power rating of the heater coil when used on 220V supply taking 5 Amps.
11. A lamp can work on a 50 volt mains taking 2 amps. What value of the resistance must be connected in series with it so that it can be operated from 200 volt mains giving the same power.
12. Calculate the work done in moving a charge of 5 coulombs from a point at a potential of 210 volts to another point at 240 volts
13. How many electrons pass through a lamp in one minute if the current be 220 mA?
14. Calculate the current supplied by a cell if the amount of charge passing through the cell in 4 seconds is 12 C ?
15. A 2 Volt cell is connected to a  $1 \Omega$  resistor. How many electrons come out of the negative terminal of the cell in 2 minutes?
16. (a) How much current will an electric bulb draw from a 220 V source, if the resistance of the bulb filament is  $1200 \Omega$ ?
- (b) How much current will an electric heater coil draw from a 220 V source, if the resistance of the heater coil is  $100 \Omega$ ?
17. The potential difference between the terminals of an electric heater is 60 V when it draws a current of 4 A from the source. What current will the heater draw if the potential difference is increased to 120 V?
18. A  $4 \Omega$  resistance wire is doubled on it. Calculate the new resistance of the wire.

19. 3. A circuit is made of  $0.4 \Omega$  wire, a  $150 \Omega$  bulb and a  $120 \Omega$  rheostat connected in series. Determine the total resistance of the resistance of the circuit.

20. A current of  $0.2$  Ampere flows through a conductor of resistance  $4.5 \Omega$ . Calculate the potential difference at the ends of the conductor.

21. A lamp has a resistance of  $96$  ohms. How much current flows through the lamp when it is connected to  $120$  volts?

22. The manufacturer specifies that a certain lamp will allow  $0.8$  ampere of current when  $120$  volts is applied to it. RR What is the resistance of the lamp?

23. How much voltage is required to cause  $1.6$  amperes in a device that has  $30$  ohms of resistance?

24. How much power is dissipated when  $0.2$  ampere of current flows through a  $100$ -ohm resistor?

25. How much energy is converted by a device that draws  $1.5$  amperes from a  $12$ -volt battery for  $2$  hours?

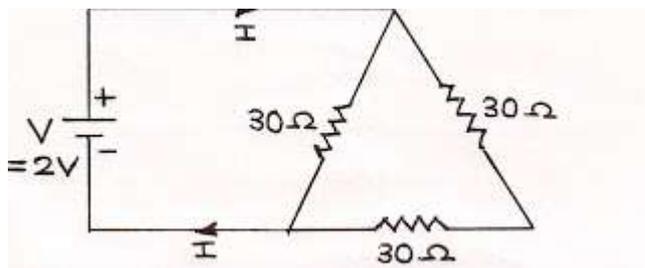
26. Two bulbs have ratings  $100$  W,  $220$  V and  $60$  W,  $220$  V respectively. Which one has a greater resistance?

27. A torch bulb has a resistance of  $1 \Omega$  when cold. It draws a current of  $0.2$  A from a source of  $2$  V and glows. Calculate

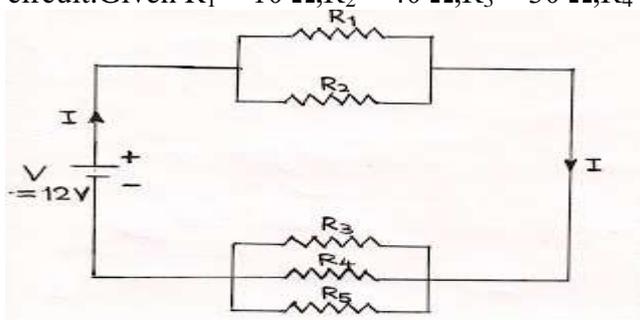
- (i) the resistance of the bulb when glowing and
- (ii) explain the reason for the difference in resistance.

28. Calculate the resistance of  $1$  km long copper wire of radius  $1$  mm. (Resistivity of copper =  $1.72 \times 10^{-8}$ )

29. Calculate the current flowing through the circuit shown below.



30. In the following figure if five resistors have been connected as shown, find the equivalent resistance and the net current of the circuit. Given  $R_1 = 10 \Omega$ ,  $R_2 = 40 \Omega$ ,  $R_3 = 30 \Omega$ ,  $R_4 = 20 \Omega$ ,  $R_5 = 60 \Omega$  and voltage of



the battery  $V = 12$  V.