Unit 114: Electrotechnical systems and equipment

# Worksheet 3: Know the underlying principles for electrotechnical work 3 (tutor)

1. The voltage drop in a cable carrying 10.5 amperes is 4.6 volts. Calculate the power lost in the cable.

48.3W

1. A DC machine takes 18.6 amperes from a 220-volt supply. Calculate the machine’s input power.

4,092W (4.092kW)

1. Complete the vertical columns in the following table:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P** | 360 | 6000 | 500 | 37.5 | 3000 | 1000 | 6000 | 750 | 1000 |
| **I** | 3 | 12 | 75 | 0.25 | 13.63 | 13.5 | 25 | 6.82 | 10 |
| **V** | 120 | 500 | 6.67 | 150 | 220 | 74.07 | 240 | 110 | 100 |

1. Calculate the voltage drop in a resistor, when the power absorbed is 9kW and the current flowing is 63 amperes.

142.86 volts

1. An appliance is rated at 3kW, 240 volts. Calculate the current drawn from the supply.

12.5 amps

1. Two resistors of 25Ω and 95Ω are connected in series across a 240 volt DC supply. Calculate:
2. the power absorbed by each resistor.

100W and 380W

1. the total power drawn from the supply.

480W

1. Calculate the value of resistor that absorbs 1kW of power when a current of 10 amperes is flowing.

10Ω

1. A joint in a cable has a resistance of 0.0236Ω. Calculate the power developed in the joint when a current of 40 amperes is flowing in the cable.

37.76W

1. Determine what the power rating of a 2kΩ resistor should be in watts if it has to be capable of carrying a current of 30mA.

1.8W

1. Calculate the power loss in a cable of 0.25Ω when a current of 30 amperes is flowing.

225W

1. Three resistors of 1Ω, 0.005kΩ and 500mΩ are connected in series across a 52 volt DC supply. Calculate:
2. the power dissipated in each resistor.

64W, 320W and 32W

1. the total power supplied to the circuit.

416W