A 11- coffee maker and a 15- frying pan are connected in series across a 120-V source of voltage. A 24- bread maker is also connected across the 120-V source and is in parallel with the series combination. Find the total current supplied by the source of voltage.

Answer

$$R_1(resistance\ of \text{coffee maker}) = 11\ \text{Ohm}, R_2(resistance\ of\ \text{frying pan}) = 15\ \text{Ohm}, R_3(resistance\ of\ \text{bread maker}) = 24\ \text{Ohm}$$

For serial connection:

$$R_{12} = R_1 + R_2 = 26\ Ohm$$

For parallel connection:

$$R = \frac{R_{12}R_3}{R_{12} + R_3} = 12{,}48\ Ohm$$

The total current supplied by the source of voltage

$$I = \frac{U}{R} = \frac{120\text{V}}{12{,}48\ Ohm} = 9{,}61538\ A$$