**CALCULATIONS**

Resistance at 30 oC (Rt ) = [1 + 0.004(t-20)]R20

= [1+ 0.004(30-20)]x7mΩ/m

= 7.28 mΩ/m

2.1

Considering socket outlet 1,

Number of wire segments in the short path = 3

Length of the short path = 3 x 0.5 m

Resistance of the short path = 3 x 0.5 m x 7.28 mΩ/m

= 10.92 mΩ

Number of wire segments in the long path = 7

Length of the long path = 7 x 0.5 m

Resistance of the long path = 7 x 0.5 m x 7.28 mΩ/m

= 25.48 mΩ

Total resistance = 10.92 mΩ // 25.48 mΩ

= 7.644 mΩ

The value is same for socket outlet 3.

Considering socket outlet 2,

Number of wire segments in each path = 5

Length of each path = 5 x 0.5 m

Resistance of each path = 5 x 0.5 m x 7.28 mΩ/m

= 18.2 mΩ

Total resistance = 18.2 mΩ // 18.2 mΩ

= 9.1 mΩ

2.2

After connecting L1 and N2 ,

Number of wire segments in the path = 8

Length of the path = 8 x 0.5 m

Resistance of the path = 8 x 0.5 m x 7.28 mΩ/m

= 29.12 mΩ

After connecting L1 and N2 as well as L2 and N1 ,

Number of wire segments in the path = 4

Length of the path = 4 x 0.5 m

Resistance of the path = 4x 0.5 m x 7.28 mΩ/m

= 14.56 mΩ

Total resistance (RLN) = 14.56 mΩ // 14.56 mΩ

= 7.28 mΩ

After connecting L1 and E2 as well as L2 and E1 ,

Since 2.5 mm2 wires are used for all Live, Neutral and Earth wiring, RLE is same as RLN.

Thereforefor each socket outlet,

RLE = 7.28 mΩ