

Ground floor:

Cafe:

Length of the café is 717cm which is equal to 7.17m

Width of the café is 670cm which is equal to 6.7m

Area of café = length * width

Area of café = 6.7m * 7.17m

Area of café = 48m²

Finally we can find the number of luminaries or number of lamp

$$\text{Number of luminaries (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100 \text{ lux} \times 48 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 11 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{48}{11}} = 2\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{6.7}{2} = 3 \text{ row}$$

$$\text{Number of laminar at each row (l)} = \frac{N}{R} = \frac{11}{3.35} = 3 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{7.17}{3} = 2.39\text{m}$$

Entrance loopy:

Length of the entrance loopy is 605cm which is equal to 6.05m

Width of the entrance is 248cm which is equal to 2.48m

Area of entrance loopy = length * width

Area of entrance loopy = 6.05 m * 2.48m

Area of entrance loopy = 15.004m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of lamina (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of lamina (N)} = \frac{100 \text{ lux} \times 15.004 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 3 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{15.004}{3}} = 2.23 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{2.48}{2.23} = 1 \text{ row}$$

$$\text{Number of lamina at each row (l)} = \frac{N}{R} = \frac{3}{1} = 3 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{6.05}{3} = 2.016 \text{ m}$$

Verandah 1:

Length of the verandah is 590cm which is equal to 5.9m

Width of the verandah is 135cm which is equal to 1.35m

Area of veranda = length * width

Area of verandah = 5.9m * 1.35m

Area of verandah = 7.695m²

Finally we can find the number of lamina or number of lamp

$$\text{Number of lamina (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of lamina (N)} = \frac{100 \text{ lux} \times 7.695 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{7.695}{2}} = 1.96 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{1.35}{1.96} = 1 \text{ row}$$

$$\text{Number of laminar at each row (l)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{5.9}{2} = 2.95\text{m}$$

Verandah 2:

Length of the verandah is 458cm which is equal to 4.58m

Width of the verandah is 135cm which is equal to 1.35m

Area of veranda = length* width

Area of verandah = 4.58m*1.35m

Area of verandah = 6.183m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100\text{lux} \times 6.183\text{m}^2}{800\text{lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{6.183}{2}} = 1.75\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{1.35}{1.75} = 1 \text{ row}$$

$$\text{Number of laminar at each row (l)} = \frac{N}{R} = \frac{2}{1} = 1 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{4.58}{1} = 4.58\text{m}$$

Verandah 3:

Length of the verandah is 550cm which is equal to 5.5m

Width of the verandah is 137cm which is equal to 1.37m

Area of veranda = length* width

Area of verandah = 5.5m*1.37m

Area of verandah = 7.535m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100 \text{ lux} * 7.535 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{7.535}{2}} = 1.94 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{1.37}{1.94} = 1 \text{ row}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{5.5}{2} = 2.75 \text{ m}$$

Shop 1:

Length of the shop is 330cm which is equal to 3.3m

Width of the shop is 303cm which is equal to 3.03m

Area of shop = length* width

Area of shop = 3.3m*3.03m

Area of verandah = 9.999m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminar (N)} = \frac{100 \text{ lux} * 9.999 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{9.999}{2}} = 2.23\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{3.03}{2.23} = 1 \text{ row}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{3.3}{2} = 1.65\text{m}$$

Shop 2:

Length of the shop is 385cm which is equal to 3.85m

Width of the shop is 330cm which is equal to 3.3m

Area of shop = length* width

Area of shop = 3.85m*3.3m

Area of shop= 12.705m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100\text{lux} \times 12.705\text{m}^2}{800\text{lum} \times 0.66 \times 0.8}$$

$$N = 3 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{12.705}{3}} = 2.05\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{3.3}{2.05} = 1 \text{ row}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{3}{1} = 3 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{3.85}{3} = 1.28\text{m}$$

Corridor 1:

Length of the corridor is 330cm which is equal to 3.3m

Width of the corridor is 140cm which is equal to 1.4m

Area of corridor = length* width

Area of corridor = 3.3m*1.4m

Area of corridor = 4.62m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100 \text{ lux} * 4.62 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Corridor 2:

Length of the corridor is 227cm which is equal to 2.27m

Width of the corridor is 186cm which is equal to 1.86m

Area of corridor = length* width

Area of corridor = 2.27m*1.86m

Area of corridor = 4.22m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100 \text{ lux} * 4.22 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Toilet 1:

Length of the toilet is 380cm which is equal to 3.8m

Width of the toilet is 128cm which is equal to 1.28m

Area of toilet = length* width

Area of toilet = 3.8m*1.28m

Area of toilet = 4.864m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{150 \text{ lux} * 4.864 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{4.864}{2}} = 1.55\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{1.28}{1.55} = 1 \text{ row}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{3.8}{2} = 1.9\text{m}$$

Toilet 2:

Length of the toilet is 227cm which is equal to 2.27m

Width of the toilet is 194cm which is equal to 1.94m

Area of toilet = length* width

Area of toilet = 2.27m*1.94m

Area of toilet = 4.405m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{150\text{lux} \times 4.405\text{m}^2}{800\text{lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{4.405}{2}} = 1.48\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{1.94}{1.48} = 1 \text{ row}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{2.27}{2} = 1.135\text{m}$$

Second floor:

Dining room 1:

Length of the dining room is 355cm which is equal to 3.55m

Width of the dining is 300cm which is equal to 3m

Area of dining room = length* width

Area of dining room = 3m*3.55m

Area of dining room = 10.65m²

$$\text{Number of laminae (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminae (N)} = \frac{150 \text{ lux} \times 10.65 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 4 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{10.65}{4}} = 1.63 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{3}{1.63} = 2 \text{ rows}$$

$$\text{Number of laminae at each row (I)} = \frac{N}{R} = \frac{4}{2} = 2 \text{ lamps}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{3.55}{2} = 1.77 \text{ m}$$

Dining room 2:

Length of the dining room is 500cm which is equal to 5m

Width of the dining is 420cm which is equal to 4.2m

Area of dining room = length* width

Area of room = 5m*4.2m=21m²

Area of balcony = 1.8m * 1.8 =2.7m²

Area of dining room = 21m²-2.7m²

Area of dining room = 18.3 m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{150 \text{ lux} \times 18.3 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 6 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{18.3}{6}} = 1.74 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{4.2}{1.74} = 2 \text{ rows}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{6}{2} = 3 \text{ lamps}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{5}{3} = 1.66 \text{ m}$$

Living room 1:

Length of the living room is 500cm which is equal to 5m

Width of the living room is 400cm which is equal to 4m

Area of living room = length* width

Area of living room = 5m*4m

Area of living room = 20m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100 \text{ lux} \times 20 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 4 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{20}{4}} = 2.23 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{4}{2.23} = 2 \text{ rows}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{4}{2} = 2 \text{ lamps}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{5}{2} = 2.5\text{m}$$

Living room 2:

Length of the living room is 520cm which is equal to 5.2m

Width of the living room is 400cm which is equal to 4m

Area of living room = length* width

Area of living room = 5.2m*4m

Area of living room = 20.8m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{100\text{lux} \times 20.8\text{m}^2}{800\text{lum} \times 0.66 \times 0.8}$$

$$N = 4 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{20.8}{4}} = 2.28\text{m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{4}{2.28} = 2 \text{ rows}$$

$$\text{Number of laminar at each row (I)} = \frac{N}{R} = \frac{4}{2} = 2 \text{ lamps}$$

$$\text{Axial spacing (A)} = \frac{L}{I} = \frac{5.2}{2} = 2.6\text{m}$$

Bed room 1:

Length of the bed room is 363cm which is equal to 3.63m

Width of the bed room is 363cm which is equal to 3.63m

Area of bed room = length* width

Area of bed room = 3.63m*3.63m

Area of bed room = 13.18m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of laminar (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of laminar (N)} = \frac{50 \text{ lux} \times 13.18 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{13.18}{2}} = 2.56 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{6.63}{2.56} = 1 \text{ row}$$

$$\text{Number of laminar at each row (l)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamp}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{6.63}{2} = 3.315 \text{ m}$$

Bed room 2:

Length of the bed room is 303cm which is equal to 3.03m

Width of the bed room is 290cm which is equal to 2.9m

Area of bed room = length* width

Area of bed room = 2.9m*3.03m

Area of bed room = 8.787m²

Finally we can find the number of laminar or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{50 \text{ lux} \times 8.787 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{8.787}{2}} = 2.09 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{2.9}{2.09} = 1 \text{ row}$$

$$\text{Number of luminaire at each row (l)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamps}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{3.03}{2} = 1.515 \text{ m}$$

Corridor 1:

Length of the corridor is 570cm which is equal to 5.7m

Width of the corridor is 162cm which is equal to 1.62m

Area of corridor = length * width

$$\text{Area of corridor} = 5.7 \text{ m} \times 1.62 \text{ m}$$

$$\text{Area of corridor} = 9.234 \text{ m}^2$$

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100 \text{ lux} \times 9.234 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 2 \text{ lamps}$$

$$\text{Minimum spacing (S)} = \sqrt{\frac{A}{N}} = S = \sqrt{\frac{9.234}{2}} = 2.148 \text{ m}$$

$$\text{Number of row (R)} = \frac{W}{S} = \frac{1.62}{2.148} = 1 \text{ row}$$

$$\text{Number of luminaires at each row (l)} = \frac{N}{R} = \frac{2}{1} = 2 \text{ lamps}$$

$$\text{Axial spacing (A)} = \frac{L}{l} = \frac{5.7}{2} = 2.85\text{m}$$

Corridor 2:

Length of the corridor is 330cm which is equal to 3.3m

Width of the corridor is 140cm which is equal to 1.4m

Area of corridor = length* width

$$\text{Area of corridor} = 3.3\text{m} \times 1.4\text{m}$$

$$\text{Area of corridor} = 4.62\text{m}^2$$

Finally we can find the number of luminaires or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100\text{lux} \times 4.62\text{m}^2}{800\text{lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Corridor 3:

Length of the corridor is 371cm which is equal to 3.71m

Width of the corridor is 125cm which is equal to 1.25m

Area of corridor = length* width

Area of corridor = 3.71m*1.25m

Area of corridor = 4.625m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100 \text{ lux} \times 4.625 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Corridor 4:

Length of the corridor is 300cm which is equal to 3m

Width of the corridor is 105cm which is equal to 1.05m

Area of corridor = length* width

Area of corridor = 3m*1.05m

Area of corridor = 3.15m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100 \text{ lux} \times 3.15 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Balcony 1:

Length of the balcony is 180cm which is equal to 1.8m

Width of the balcony is 150cm which is equal to 1.5m

Area of balcony = length* width

Area of balcony = 1.8m*1.5m

Area of balcony = 2.7m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100 \text{ lux} \times 2.7 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Balcony 2:

Length of the balcony is 415cm which is equal to 4.15m

Width of the balcony is 63cm which is equal to 0.63m

Area of balcony = length* width

Area of balcony = 4.15m*0.63m

Area of balcony = 2.6145m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100 \text{ lux} \times 2.615 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Balcony 3:

Length of the balcony is 190cm which is equal to 1.9m

Width of the balcony is 83cm which is equal to 0.83m

Area of balcony = length* width

Area of balcony = 1.9m*0.83m

Area of balcony = 1.557m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{100 \text{ lux} \times 1.557 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Shower 1:

Length of the shower is 290cm which is equal to 2.9m

Width of the shower is 80cm which is equal to 0.80m

Area of shower = length* width

Area of shower = 2.9m*0.80m

Area of shower = 2.32m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{150 \text{ lux} \times 2.32 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$

Shower 2:

Length of the shower is 195cm which is equal to 1.95m

Width of the shower is 105cm which is equal to 1.05m

Area of shower = length* width

Area of shower = 1.95m*1.05m

Area of shower = 2.0475m²

Finally we can find the number of luminaire or number of lamp

$$\text{Number of luminaire (N)} = \frac{E \times A}{\phi_{ins} \times UF \times MF}$$

$$\text{Number of luminaire (N)} = \frac{150 \text{ lux} \times 2.0475 \text{ m}^2}{800 \text{ lum} \times 0.66 \times 0.8}$$

$$N = 1 \text{ lamps}$$