Tutorial 5.1

1)

(a)

	Type	Connected	DF	Max Demand
(i)	58o Fluorescent Lamp 18 lamps ⇒ 6/phase	6x40 x1.8/230 =1.88A	0.66	1.24A
(ii)	Filament Lamp 18 lamps ⇒ 6/phase	6x100/230 =2.61A	0.66	1.72A
(iii)	SSO [Choose largest circuit] 30/6 = 5 13A SSO/cct 3-phase ⇒ 2 cct/phase	~~(3000x2)/230~~ ~~= 2.61A~~ 3000/230 = 13.04A	1 (1st) 0.4 (2nd)	13.04A 5.22A
(iv)	Water Heater [1/phase]	3000/230 = 13.04A	1	13.04A
(v)	AirCon	(2x4500)/(√3 x400x0.9x0.8) = 18.042A	1	18.042A

Total Connected = 1.88 + 2.61 + 26.08 + 13.04 + 18.042
= 61.652

Max Demand = 1.24 + 1.72 + 13.04 + 5.22 + 13.04 + 18.042
= 52.302A

20% spare = 62.76A

63A CCB

2) office

Type	Connected Load	DF	Max Demand
Fluorescent	$(1.8)(60 \times 2 \times 36)/230$	0.9	30.42A
	$= 33.8$		
SSO	1 cct: 30	1	30A
	5 cct: $30 \times 5 = 150A$	0.5	75A
Air con	$\frac{(2 \times 8000)}{\sqrt{3}(400)(0.8)(0.85)} = 17A$	1	17A
		0.8	13.5A
Fans	$\frac{9 \times 100}{230} = 3.91A$		0
			0

Connected

Max Demand = 75.64A

30% = 98.3A

100A TP selected

office

	Connected Load	DF	Max Demand
Fluorescent Light	$(20 \times 2 \times 36 \times 1.8)/\sqrt{3} \times 400$ = 3.74A	0.9	3.37A
SSO	$5000/\sqrt{3} \times 400$ = 7.22A	1	7.22A
		0.5	14.44A
Aircon	$10000/\sqrt{3} \times 400 \times 0.8$(pf) = 18.04A	1	18.04A

Max Demand = 3.37 + 7.22 + 4.44 + 18.04 = 43.07A

20% = 51.684A

⇒ 63A Circuit Breaker

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