

Licensed Electrician's Assessment (LEA)

Licensed Electrician's Practical Assessment Sample Paper 1 Marking Guide (2020)



Question 1 - Meter Panel and Switchboard Wiring

The installation is a 3 Phase air conditioned business premises situated at 37 City Road, Jonesville. All final sub-circuits must be RCD protected.

The following equipment is to be installed at the **main switchboard**:

- 1 - 3Φ 24A reverse cycle air conditioner, 230V control, wired to an external enclosure.
- 1 - 1Φ 4.7kW range
- 42 - 230V 16W LED luminaires, installed over two circuits. Both circuits are to be installed on the same phase.
- 1 - 230V 3.8kW electric vehicle charger

The following equipment is to be installed from the **distribution board** and controlled by an isolator:

- 16 – 230V 10A double socket outlets installed over two circuits
- 40 – 230V 16W LED luminaires on one circuit

Table C2 Column 3

Circuits	Load Group	Calculations	MD		
			Red	White	Blue
1 - 3Φ 24A reverse cycle air conditioner	C (i)	FCL of highest rated appliance and 75% of the remainder 24A	24	24	24
1 - 1Φ 4.7kW range	C (i)	FCL of highest rated appliance and 75% of the remainder $4.7\text{kW}/230\text{V} = 20.43\text{A} \times 0.75 = 15.33$	15.33		
42 - 230V 16W LED luminaires all on the same phase	A (i)	Full connect load $(42 \times 16)/230 = 2.92$	2.92		
1 - 230V 3.8kW electric vehicle charger	C (ii)	$\text{FLC } 3.8\text{kW}/230\text{V} = 16.52$		16.52	
Equipment 1Φ Distribution Board					
16 - 230V 10A double socket outlets	B (ii)	1000W for the first socket outlet plus 100W or each additional outlet $(1000 + 31 \times 100)/230 = 17.83\text{A}$			17.83
40 - 230V 16W LED luminaires	A (i)	Full connect load $(42 \times 16)/230 = 2.92$			2.92
Distribution Board MD					20.75A
Total Installation MD			42.25A	40.52A	44.75A

AS/NZS 3008.1.1

Consumer's Mains	Table 7	Column 15 (O/H) or 24 (U/G)
Sub-main	Table 4	Column 15
Three phase load	Table 7	Column 15
Single phase loads	Table 10	Column 15

Maximum Demand of the Installation	Current Rating of the Main Switch	Size of the Consumers Mains Cable		Size of the Main Earth Conductor	
		O/head	U/G	O/head	U/G
44.75A	50A	16mm ²	10mm ²	6mm ²	4mm ²

Maximum Demand of the Distribution Board	Current Rating of the Distribution Board Sub-main Circuit Protection	Size of the Sub-main Cable
20.75A	25A	4mm ²

Location	Description	Circuit Loading (T.C9)	Circuit Breaker Rating	Cable Size	AS/NZS 3008
Main Board	3 Φ 24A reverse cycle air conditioner	24A	25A	4mm ²	T7 C15
Main Board	1 Φ 4.7kW range	20.43A	25A	4mm ²	T10 C15
Main Board	21 – 230V 16W LED luminaires	1.46A	10A	1.5mm ²	T10 C15
Main Board	21 – 230V 16W LED luminaires	1.46A	10A	1.5mm ²	T10 C15
Main Board	1 Φ 3.8kW electric vehicle charger	16.52A	20A	2.5mm ²	T10 C15
Distribution Board	8 - 1 Φ 10A double socket outlets	16A	16A/20A	2.5mm ²	T10 C15
Distribution Board	8 - 1 Φ 10A double socket outlets	16A	16A/20A	2.5mm ²	T10 C15
Distribution Board	40 – 230V 16W LED luminaires	2.92A	10A	1.5mm ²	T10 C15

Question 1 = 35 Marks

Question 2.8 – Testing of Operation of RCDs

Answer: Yes

Wiring Rules Clause Number: 2.6.3.2.3.3(a)

1 Mark

Question 3.2 - MEN System

- c) via the main neutral conductor
- a) true
- b) decreases
- b) false

(2 + 2 + 2 + 2 = 8 Marks)