

Licensed Electrician's Theory (LET) Assessment Sample Paper Marking Guide (2023)



AS/NZS 3000 Wiring Rules

Question 1

Green/yellow sleeving (2 marks)

Clause 3.8.2.2 (b) (2 marks)

Question 2

2.5 m (2 marks)

Clause 4.3.6 (a) (2 marks)

Question 3

Possible electrolytic action effecting the electrode or other services (2 marks)

Clause 5.3.6.4 (b) (2 marks)

Question 4

After completion (2 marks)

Clause 8.3.1 (2 marks)

AS/NZS 3012 Construction and Demolition Sites

Question 5

40m (2 marks)

Clause 2.6.7 Table 1 (2 marks)

Question 6

IP2X (2 marks)

Clause 2.7.7(a) (2 marks)

Electrical Safety (General) Regulations 2019

Question 7

50 megohms (2 marks)

Regulation 228 Table 228 (2 marks)

Electrical Shock Survival

Question 8

Any conductive material may be listed such as a steel stud, earth electrode, steel bar or Copper bar as these conduct electricity (2 marks)

Using conductive material will cause the rescuer to receive an electric shock (2 marks)

Cable Selection

Question 9

Table 3(3) Item 4 Table 13 Col 23 - 25mm² = 125A (1 Mark) (Item number is optional do not deduct marks)

125A x 2 = 250A (2 Marks)

Table 25(2) Col 3 Derating for more than one circuit = 0.87 (1 Mark)

Table 28(1) Col 3 Derating for Depth 0.6m = 0.99 (1 Mark)

250x0.87x0.99 = 215.33A (1 Mark)

(b) Table 25(2) Col 2 Derating for more than one circuit = 0.81 (1 Mark)

155.88 A = 35mm² (2 Marks)

(Deduct 1 Mark for no or incorrect units)

(Other valid calculation methods are also acceptable, e.g. $100/(0.87 \times 0.99) = 118.5A$)

DC Circuits

Question 10

I_c = 5A (2 marks)

R_b = 50Ω (2 marks)

P_T = 4000W (2 marks)

Deduct 1 mark for no or incorrect units.

Maximum Demand

Question 11

Table C1 Column 2 (1 mark)

- 1 – 7.2 kW Electric Vehicle charge point
- 33 - 18W LED lighting points installed over two circuits
- 1 - 16A reverse cycle air conditioner
- 19 - 10A double socket outlets installed over two circuits
- 1 - 3.8kW cooking appliance,

Domestic Residence.

Table C1 Column 2

Equipment	Load Group	Calculation	Maximum Demand
1 – 7.2 kW Electric Vehicle charge point	(j)(iv)	Full load 31.30A	31.3A (1 mark)
1 - 16A reverse cycle air conditioner	(d)	75% connected load $16A \times 75\% = 12A$	12A (1 mark)
33 - 18W LED lighting points	A(i)	3A for 1-20 points and 2A for each additional 20 points = 5A	5A (1 mark)
1 - 3.8kW cooking appliance	(c)	50% connected load $3800/230 = 16.52 \times 0.5 = 8.26A$	8.26A (2 mark)
19 - 10A double socket outlets 38 Points total	(b)(i)	10A for 1-20 points and 5A for each additional 20 points = 15A	15A (1 mark)
Total Maximum Demand			71.56A (1 mark)

Deduct 1 mark for no or incorrect units on total, deduct 1 mark for no or incorrect load groups.

Voltage Drop

Question 12

Consumer Mains

Table 41 Column 8 (1 mark)

Vc 1.18 (1 mark)

Vd 4.75V (1 mark)

Sub-mains

Table 41 Column 8 (1 mark)

Vc 1.62 (1 mark)

Vd 2.72V (1 mark)

Final Sub-circuit

Table 42 Column 2 (1 mark)

Vc 8.77 (1 mark)

Vd 4.17V (1 mark)

Total Voltage Drop = $4.7 + 2.72 + 4.17 = 11.59$ V (1 mark)

Deduct 1 mark for no or incorrect units on total. Deduct 1 mark for no or incorrect table number/s.

Overload and Short Circuit Calculations

Question 13

Overcurrent divided by MCB current rating = 3 (1 mark)

Minimum Time = Accept 4-6 seconds (1 mark)

Maximum Time = Accept 20 - 24 seconds (1 mark)

Deduct 1 mark for no or incorrect time unit.

Question 14

Transformer impedance

230/16650 (2 marks)

0.01381Ω (1 mark) Answer must be to 5 decimal places.

Main switchboard prospective fault

230/ (0.00138 +0.0043) (2 marks)

40,492A (1 mark)

Distribution board prospective fault

230/ (0.00138 +0.0043+ 0.0086) (2 marks)

16,106A (1 mark)

Deduct 1 mark for no or incorrect units in final answer.

Residual Current Devices

Question 15

Yes

No

No

Motor and Starters

Question 16

B (2 marks)

AS/NZS 4836:2011

Question 17

Identify appropriate risk treatments and 3 m. (2 marks)

Clause number: 2.4 (2 marks)

Installation Defects - Non Domestic

Question 18

2 marks for correct defect, one mark for the correct clause.

Only accept the first 5 defects candidate has listed.

1. Consumer's mains are not installed in a manner to maintain supply when exposed to fire 7.2.2.1
2. The cable to the distribution board is undersized - 3.4.1
3. Main switch distribution board not labelled 'Main Switch' - 2.3.3.5(b)
4. The main neutral connection at the neutral bar is not labelled - 2.10.5.4
5. The telecommunications earthing conductor is undersized, 6mm² minimum - 5.6.2.7 (iv)
6. Main switch fire pump not labelled 'IN THE EVENT OF FIRE DO NOT SWITCH OFF' 7.2.4.4(b)
7. 'Main switch fire pump' label not in uppercase 7.2.4.4(a)
8. Strip earth electrode not at minimum horizontal length 5.3.6.3(i)
9. Strip earth electrode not at minimum depth 5.3.6.3