

Licensed Electrician's Theory (LET) Assessment Sample Paper Marking Guide (2022)



AS/NZS 3000 Wiring Rules

Question 1

100mm (2 marks)

Clause 3.13.3 (b) (2 marks)

Question 2

All live (active and neutral) conductors (2 marks)

Clause 4.7.1 (2 marks)

Question 3

At the installation switchboard to which the connection of the electricity generation system is made. (2 marks)

Clause 7.3.3 (2 marks)

Question 4

Tests shall be repeated (2 marks)

Clause 8.3.3.3 (2 marks)

AS/NZS 3012 Construction and Demolition Sites

Question 5

It shall be isolated, repaired or replaced and tested as required. (2 marks)

Clause 3.7.1 (2 marks)

Question 6

Legibly and indelibly marked (2 marks)

Clause 2.3.1.1 (2 marks)

Electrical Safety (General) Regulations 2019

Question 7

Double insulation (2 marks)

Regulation 224 (4) (a) (2 marks)

Electrical Shock Survival

Question 8

Cease resuscitation (2 marks)

Move the casualty into the recovery or coma position (2 marks)

Cable Selection

Question 9

Table 3 (4) Item 4 (1 mark)

Table 13 Column 25 (2 marks, one for table and one for column)

Derating factor Table 26(2) Column 3 Factor 0.93 (1 mark)

Derating factor Table 28(2) Column 3 Factor 0.97 (1 mark)

Part (i) Answer: 95mm^2 (2 marks)

Part (ii) Derating factor Table 28(2) Col 3 0.99

Answer: 70mm^2 (1 mark)

Deduct 1 mark for no or incorrect units on final answers. Only deduct one mark regardless of number of missing units.

DC Circuits

Question 10

$I_c = 5\text{A}$ (2 marks)

$R_b = 50\Omega$ (2 marks)

$P_T = 1600\text{W}$ (2 marks)

Deduct 1 mark for no or incorrect units.

Maximum Demand

Question 11

Table C1 Column 2 (1 mark)

- 2 - single 15A socket outlet installed over two circuits
- 1 - 16A space heater
- 37 - 15W LED lighting points installed over two circuits
- 2 - 1.8kW outdoor lights
- 15 - 10A double socket outlets installed over two circuits

Domestic Residence.

Table C1 Column 2

Equipment	Load Group	Calculation	Maximum Demand
2 - 15A single socket outlets	B(i)	10A	10A (1 mark)
1 - 16A space heater	D	75% connected load $16A \times 75\% = 12A$	12A (1 mark)
37 - 15W LED lighting points	A(i)	3A for 1-20 points and 2A for each additional 20 points = 5A	5A (1 mark)
2 - 1.8kW outdoor lights	A(ii)	75% connected load $(1800 + 1800)/230 = 15.65 \times 0.75 = 11.74A$	11.74A (2 mark)
15 - 10A double socket outlets 30 Points total	B(i)	10A for 1-20 points and 5A for each additional 20 points = 15A	15A (1 mark)
Total Maximum Demand			53.74A (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 3.1V (1 mark)

Sub-mains

Table 41 Column 8 (1 mark)

Vc 1.62 (1 mark)

Vd 2.24V (1 mark)

Final Sub-circuit

Table 42 Column 2 (1 mark)

Vc 8.77 (1 mark)

Vd 5.92V (1 mark)

Total Voltage Drop = $3.1 + 2.23 + 5.92 = 11.26V$ (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 = 5 (1 mark)

Minimum Time = Accept 1.2-1.5 seconds (1 mark)

Maximum Time = Accept 4.6- 4.9 seconds (1 mark)

Deduct 1 mark for no or incorrect time unit.

Question 14

Transformer impedance

$230/12,600$ (2 marks)

0.01825Ω (1 mark) Answer must be to 5 decimal places.

Main switchboard prospective fault

$230/ (0.01825 + 0.0037)$ (2 marks)

10,478A (1 mark)

Distribution board prospective fault

$230/ (0.01825 + 0.0037 + 0.0097)$ (2 marks)

7,267A (1 mark)

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

Residual Current Devices

Question 15

25A (1 mark)

AS/NZS 3000 Clause 2.6.2.1 (b) (2 marks)

Motor and Starters

Question 16

C (2 marks)

AS/NZS 4836:2011

Question 17

To continually guide the excavator to ensure it keeps clear of, and does not make contact with or damage any cables. (2 marks)

Clause number: 3.9.8.1 (b) (i) (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. Main Switch fire pump does not clearly and reliably indicated the isolator position (ON/OFF) 2.3.2.2.1 (c)
2. Fire pump protection device under rated 7.2.5.6.2 (b) (i)
3. Main Earth cable under sized for the installation 5.3.3.2
4. Fire pump cables are not installed in a manner to maintain supply when exposed to fire 7.2.2.1
5. The cable to the distribution board is undersized – 3.4.1
6. The main neutral connection at the neutral bar is not labelled – 2.10.5.4
7. 'Main switch fire pump' not identified in uppercase 7.2.4.4(a)
8. Fire Pump not marked IN THE EVENT OF FIRE, DO NOT SWITCH OFF
9. Strip earth electrode does not have a minimum horizontal length of 3m 5.3.6.3 (i)
10. No initial verification record on or at the main switchboard 8.4
11. Stripped Electrode under sized 5.3.6.2 Table 5.2
12. Telecommunication equipotential bond should be a minimum of 6mm 5.6.7 (iv)