

Licensed Electrical Inspector Theory (LEIT) Assessment – Sample Paper

Marking Guide July 2026

OFFICIAL



Questions 1–14: Standards, Regulations and the Act

Question 1.

Answer: No, the ESR system shall not be installed in hazardous areas [2 marks]

Reference Document: AS/NZS 3000:2018 [1 mark]

Clause Number: 3.16(d) [2 marks]

Question 2.

Answer: Identified by marking of its location on the switchboard at which the circuits supply the pool or spa originate, or other permanent location. [2 marks]

Reference Document: AS/NZS 3000:2018 [1 mark]

Clause Number: 5.6.2.6.3(b) [2 marks]

Question 3.

Answer: Set to carry 125% of the full load motor current continuously and open the circuit in not less than 20s at 600% of the full load motor current. [2 marks]

Reference Document: AS/NZS 3000:2018 [1 mark]

Clause Number: 7.2.5.6.2 (b) (i) (ii) [2 marks]

Question 4.

Answer: 120 minutes (an answer of 2 hours also acceptable) [2 marks]

Reference document: AS/NZS 3000:2018 [1 mark]

Clause number: H1.3 Table H1 [2 marks]

Question 5.

Answer: IP23 [2 marks]

Reference Document: AS/NZS 3012:2019 [1 mark]

Clause Number: 2.3.2.1(b) [2 marks]

Question 6.

Answer: Each socket outlet on a service pillar shall be identified by suitable indelible means to indicate the site that it is intended to supply. [2 marks]

Reference Document: AS/NZS 3001.1:2022 [1 mark]

Clause Number: 2.4.6.3 [2 marks]

Question 7.

Answer:

(a) By a competent person who has tools, testing equipment and personal protective equipment that –

(i) are suitable for the work; and

(ii) have been properly tested; and

(iii) are maintained in good working order; and

(b) in accordance with a safe work method statement prepared for the work.

[2 marks]

Reference Document: Electrical Safety (General) Regulations 2019

[1 mark]

Clause Number: 511 (1) (a) (b)

[2 marks]

Question 8.

Answer: At the origin of every circuit and at each point where a reduction occurs in the current carrying capacity of the conductors.

[2 marks]

Reference Document: AS/NZS 3000:2018

[1 mark]

Clause Number: 2.5.1.3

[2 marks]

Question 9.

Answer: No

[2 marks]

Reference Document: AS/NZS 3004.1:2014

[1 mark]

Clause Number: 1.6.4(b)

[2 marks]

Question 10.

Answer: All elements for which the classification is sought, including any joints or components forming part of the wiring system.

[2 marks]

Reference Document: AS/NZS 3013:2005

[1 mark]

Clause Number: Appendix A4.1

[2 marks]

Question 11.

Answer: 3000mm or 3m

[2 marks]

Reference Document: Electrical Safety (General) Regulations 2019

[1 mark]

Clause Number: 303(2)(b)

[2 marks]

Question 12.

Answer: 60m

[2 marks]

Reference Document: AS/NZS 3002:2021

[1 mark]

Clause Number: 2.7.5.4.3 Table 3.1

[2 marks]

Question 13.

Answer: connected to the electricity supply

[2 marks]

Reference Document: Electricity Safety Act 1998

[1 mark]

Clause Number: 45(1)

[2 marks]

Question 14.

Answer: A residual current device or an isolating transformer

[2 marks]

Reference Document: AS/NZS 4836:2023

[1 mark]

Clause Number: 3.4

[2 marks]

Question 15 – Voltage Drop.

Mains Heaviest loaded phase: Blue phase 550A

$$T4.15(B) V_c = 0.463V/A.m$$

[1 mark]

$$I = 550/2 = 275A$$

$$VD = (15 \times 275 \times 0.463)/1000 = 1.91V$$

$$\text{Single phase voltage drop} = 1.91/\sqrt{3} = 1.10V$$

[1 mark]

Submains Heaviest loaded phase: Red phase 63A

$$T4.15(B) V_c = 2.43mV/A.m$$

[1 mark]

$$VD = (40 \times 63 \times 2.43)/1000 = 6.12V$$

$$\text{Single phase voltage drop} = 6.12/\sqrt{3} = 3.53V$$

[1 mark]

FSC T4.17(B) $V_c = 15.6 \times 1.155 = 18.02mV/A.m$

[1 mark]

$$I = 20/2 = 10A$$

(From AS/NZS 3000:2018 clause 3.6.2. exception 1; it is not necessary to quote this clause but must use correct current value based on this clause).

$$V_D = (25 \times 10 \times 18.02)/1000 = 4.50V$$

[1 mark]

$$\text{Total volts lost (single phase)} = 1.10 + 3.53 + 4.50 = 9.13V$$

$$\text{Voltage at the terminals} = 230 - 9.13 = 220.87V$$

[1 mark]

Yes, the installation complies.

[1 mark]

Question 16 – Cable Operating Temperature.

$$(I_o / I_R)^2 = (\Theta_o - \Theta_A) / (\Theta_R - \Theta_A)$$

(This formula may be located in AS/NZS 3008.1.1 Clause 4.4)

$$\text{Transposed for cable operating temperature } \Theta_o = (I_o / I_R)^2 \times (\Theta_R - \Theta_A) + \Theta_A$$

$$\Theta_o = (120 / 280)^2 \times (90 - 25) + 25$$

$$= 36.9^\circ C$$

[1 mark]

(i) The cable operating temperature is 36.9°C

[1 mark]

(ii) The effect would be to lower the value of V_c .

[1 mark]

Question 17 – Prospective Fault Current.

$I_{(fault\ current\ at\ transformer)}$	$= \frac{750,000}{(400 \times \sqrt{3})} \times \frac{100}{6} = 18,042A$	[2 marks]
$Z_{(transformer)}$	$= 230 / 18042 = 0.01275\Omega$	[1 mark]
$Z_{(mains\ active\ \&\ neutral)}$	AS/NZS 3008.1.1:2025 Table 4.5(A) $R_c = 0.342\ \Omega/km$	[1 mark]
	$0.342 \times (15/1000) \times 2 = .01026\ \Omega$	[1 mark]
$I_{(MSB)}$	$= 230 / (0.01275 + 0.01026) = 9996A$	[2 marks]
$Z_{(Sub\ mains\ active\ \&\ Neutral)}$	$= AS/NZS\ 3008.1.1:2025\ Table\ 4.5(A)\ R_c = 0.884\ \Omega/km$	[1 mark]
	$0.884 \times (37 / 1000) \times 2 = 0.06542\Omega$	[1 mark]
$I_{(DB)}$	$= 230 / (0.01275 + 0.01026 + 0.06542) = 2601A$	[2 marks]

Question 18 – Circuit Breaker Selection.

$I_a = \frac{0.8U_oS_{phSpe}}{L_{maxp}(S_{ph}+S_{pe})}$	(This formula may be located in AS/NZS 3000 clause B5.2.2)	
$I_a = \frac{0.8 \times 230 \times 50 \times 16}{160 \times 22.5 \times 10^{-3}(50 + 16)}$		[1 mark]
$I_a = 619.5A$		[2 marks]
Type B $I_a = 4 \times \text{rated current}$ $= 4 \times 100 = 400A$		[1 mark]
Type C $I_a = 7.5 \times \text{rated current}$ $= 7.5 \times 100 = 750A$		[1 mark]
Type D $I_a = 12.5 \times \text{rated current}$ $= 12.5 \times 100 = 12,500A$		[1 mark]
Therefore, a Type B must be used		[1 mark]

Question 19 – Clearing Time.

$t = \frac{K_e I_r}{I_f^{1.5}}$	(This formula may be located in AS/NZS 3000 clause 2.5.5.3)	
$I_r = 1800A$		
$I_f = 30\% \text{ of } 27kA = 0.3 \times 27,000 = 8100A$		[1 mark]
$t = \frac{250 \times 1800}{8100^{1.5}}$		[1 mark]
$t = 0.617 \text{ seconds}$		[2 marks]

Question 20 – Earth Size.

$$S = \sqrt{(I^2 t / K^2)} \quad (\text{This formula may be located in AS/NZS 3000 clause 5.3.3.1.3})$$

K is taken from Table 5.1 AS/NZS 3008.1.1:2025 with an initial temp of 25°

Note: earth cables do not normally carry current therefore the initial temperature is always the ambient temperature of 25°C for earthing conductors, and a final temp of 250° (from Table 5.1).

[2 marks:
1 mark for
Table no,
1 mark for
value]

$$K = 178.3$$

$$S = \sqrt{(7000^2 \times 0.4 / 178.3^2)}$$

$$= 24.83 \text{mm}^2$$

[2 marks]

Use 25mm² cable

[1 mark]

Question 21 – Circuit Breaker and Fuse Ratings.

a) for a circuit breaker $I_B \leq I_N \leq I_Z$

125 ≤ I_N ≤ 133 Any circuit breaker with a rating between 125 and 133 inclusive may be used, therefore may use 125A or 130A

[2 marks]

b) for a HRC fuse $I_B \leq I_N \leq 0.9 I_Z$

$$125 \leq I_N \leq 0.9 \times 133$$

125 ≤ I_N ≤ 119.7 not possible, therefore a HRC fuse cannot be used.

[2 marks]

Question 22 – Cable Selection.

$$T3.19: Col17 = 251A$$

[2 marks]

$$\times 2 = 502A$$

[1 mark]

Correction factors

$$\text{Table 3.38 for 2 @ 0.15m} = 0.87$$

[1 mark]

$$\text{Answer Part (a)} = 502A \times 0.87 = 436.74A$$

[1 mark]

$$T3.48: \text{for } 0.9^\circ\text{C.m/W} = 1.11$$

[1 mark]

$$\text{Answer Part (b) new current rating} = 436.74A \times 1.11 = 484.783A$$

[1 mark]

Question 23 – Discrimination.

$$C1 \geq 1.5 \times C_{2\text{maximum permissible setting}}$$

$$600 \geq 1.5 \times C_{2\text{maximum permissible setting}}$$

$$C_{2\text{maximum permissible setting}} = 600/1.5 = 400A$$

$$\text{Max permissible} = 400A$$

[2 marks]