Licensed Electrical Inspector RE Class Theory Assessment – Sample Paper

Marking Guide July 2026

OFFICIAL

Questions 1 – 11: Standards and Regulations

Question 1.

Answer: AS/NZS 5033 [2 marks]

Reference Document: Electricity Safety (General) Regulations [1 mark]

Clause Number: 243 [2 marks]

Question 2.

Answer:

- ✓ Bedroom
- ✓ Cinema / home theatre room
- × Laundry
- ✓ Kitchen
- × Garage
- ✓ Childrens playroom
- × Workshop
- ✓ Study

All must be correct to be awarded the marks [2 marks]

Reference Document: AS/NZS 5139 [1 mark]

Clause Number: 1.3.42 [2 marks]

Question 3.

Answer: all live conductors [2 marks]

Reference Document: AS/NZS 4777.1 [1 mark]

Clause Number: 3.4.4 (a) [2 marks]

Question 4.

Answer: No. [2 marks]

Reference Document: AS/NZS 3000 [1 mark]

Clause Number: 6.3.4.7 [2 marks]

Question 5.

Answer: Yes. [2 marks]

Clause Number: 1.4.29 [2 marks]

Question 6.

Answer: 6mm^2 [2 marks]

First Reference Document: AS/NZS 5033 [1 mark]

Clause Number: 4.6.5 [2 marks]

Second Reference Document: AS/NZS3000 [1 mark]

Clause/Table Number: Table 5.1 [1 mark]

Question 7.

Answer: The wiring system shall be identified by distinctive labels marked with the word 'SOLAR' on the exterior surface of the wiring system over the length of the enclosure at intervals not exceeding 2m. [2 marks]

Reference Document: AS/NZS 5033 [1 mark]

Clause Number: 5.3.1.1(a) [2 marks]

Question 8.

Any four of the below:

1. The electrical installation main switchboard
2. Stand alone power system switchboard
3. System shutdown procedure sign
4. The battery bank
5. Fuel tanks and storage for the generator set (petrol, diesel and/or LP Gas)
6. Other flammable or explosive substances relevant to the stand-alone system
7. The photovoltaic array and associated isolating switch(es)
8. All sources of renewable energy

All four must be correct to obtain the marks for this question. [2 marks]

Reference Document: AS/NZS 4509.1 [1 mark]

Clause Number: 2.4 [2 marks]

Question 9.

Answer: True [2 marks]

Reference Document: AS/NZS 1170.2 [1 mark]

Clause/Figure Number: Figure 3.1(A) [2 marks]

Question 10.

Answer: MAIN ISOLATOR (GRID) [2 marks]

Reference Document: AS/NZS 4777.1 [1 mark]

Clause Number: 6.3(c) [2 marks]

Question 11.

Answer: In an area where an authorised person will be aware of the signal. [2 marks]

Reference Document: AS/NZS 5139 [1 mark]

Clause Number: 4.3.8 [2 marks]

Question 12 – Voltage Rise.

Inverter current I = P/V

I = 10,000/(400x√3) = 14.43A. [1 mark]

1. Solar mains

   Cable size 4mm^2

   Cable Type: V90 multi core

   Table 4.17(B) Col 9 Vc = 9.71 mV/A.m [1 mark]

   Vd = (20 x 14.43 x 9.71)/1000 = 2.80V

   Percentage = 2.80/400 x 100/1 = 0.7% [2 marks]

2. 3 phase sub mains Cable size 10mm^2

   Cable Type: V90 multi core

   Table 4.17(B) Col 9 Vc = 3.865 mV/A.m [1 mark]

   Vd = (30 x 14.43 x 3.86)/1000 = 1.67V

   Percentage = 1.67/400 x 100/1 = 0.42% [2 marks]

3. 3 phase consumers mains Cable size 35mm^2

   Cable Type: X90 SDI

   Table 4.15(B) Col 11 Vc = 1.17 mV/A.m [1 mark]

   Vd = (35 x 14.43 x 1.17)/1000 = 0.59V

   Percentage = 0.59/400 x 100/1= 0.15% [2 marks]

   Total voltage rise = 2.80 + 1.67 + 0.59 = 5.06V

   Total voltage rise percentage = 0.7 + 0.42 + 0.15 = 1.27%

   The voltage rise value must be <2% = 8V max [2 marks*]

   ***Note:** this answer shows the voltage rise in voltages and as a percentage.
   Only one of these is required (candidate may choose their preferred option).
   Marks only allocated once in each section.
   2% of 400V = 8V

   Yes, the installation complies [2 marks]

Note: Questions 13-1 and 13-2 are provided on this sample paper to show the type of questions that may be supplied. Only one of these will appear on the assessment. Marks for question 13 should only be counted for one version of this question.

Question 13 – 1 PV module maximum voltage calculation – Method A.

AS/NZS 5033 clause 4.2.1.2 (a)

PV module Voc = 45V

Tmin = 1.5°C (value from question information)

Tstc = 25°C (value from question information)

a) Calculate: Yv = Voltage temperature co-efficient V per °C of the module.

PV module temperature coefficient of Voc = -0.28%/°C

PV module Voc = 45 Volts

Formula: Yv = PV module temp coefficient x module Voc

Yv = -0.28%/oC x 45 = -0.126 [2 marks]

Formula: Vmod max = Voc mod + Yv (Tmin - Tstc)

Vmod max = 45 + -0.126 (1.5 – 25)

= 45 + -0.126 x -23.5

= 45 + 2.97

Vmod max = 47.97 V dc [3 marks]

b) Using your answer from part a) what is the maximum number of modules in a single string that can be connected to the inverter specified above?

Formula: modules/string = Inverter Vmax ÷ Vmod max

Therefore: modules/string = 600 / 47.97 = 12.51

Answer: 12 modules [2 marks]

Question 13 – 2 PV module maximum voltage calculation – Method B.

AS/NZS 5033 clause 4.2.1.2 (b)

a) Determine module Voc

Determining V / ºC from %

V/°C = Off load Voltage (Volts) x Temperature Coefficient (%)

V/°C = 46.29 x -0.37% = 46.29 x -0.37/100

V/°C = 46.29 x -0.0037 = -0.17 V/°C

V/°C = - 0.17 V/°C [2 marks]

Calculate the difference from STC (25 ºC)

Melbourne min. temp. = - 3.3ºC

Calculate the difference from STC (25 ºC)

Diff = Tmin – Tstc

-3.3 - 25 = -28.3 ºC [1 mark]

Determine the voltage of the module at -3.3 ºC Voc + (V / ºC X Temp diff)

Vmod max = 46.29 + (-0.17 X -28.3)

Vmod max = 46.29 + (4.81V)

Vmod max = 51.1V [2 marks]

b) Calculate the maximum number of modules that can be installed

Modules = 600Vmax / 51.1

Vmod max = 11.74

Answer: 11 modules [2 marks]

Question 14 – PV module maximum voltage calculation – Method C.

AS/NZS 5033 clause 4.2.1.2 (c)

a) Calculate the PV module maximum voltage (Vmod max)

Formula: Voc mod corrected = Voc mod x correction factor from table 4.1

From AS/NZS 5033 Table 4.1, correction factor is 1.10 [1 mark]

Therefore: Vmod max = 47 x 1.10 = 51.70 V dc [1 mark]

b) Using your answer from part a) what is the maximum number of modules in a single string that can be connected to the inverter specified above?

Formula: modules/string = Inverter Vmax ÷ Voc corrected

Therefore: modules/string = 600 VDC / 51.70 = 11.6

Answer: 11 modules maximum [2 marks]

Question 15 – String Current.

a) Istring max = 1.25 x Ki x Isc mod

= 1.25 x 1 x 10.31 [1 mark]

= 12.89 A [1 mark]

Standard Number: AS/NZS 5033 Clause: 3.3.3.1

b) If string = (Sa-1) x Istring max

= (3-1) x 12.89 [1 mark]

= 2 x 12.89

= 25.78 A [1 mark]

Standard Number: AS/NZS 5033 [1 mark]

Part a) Clause Number: 3.3.3.1 [1 mark]

Part b) Clause Number: 3.3.3.2 [1 mark]

Question 16.

Answer: Not less than two openings or doorways, spaced well apart, shall be provided [2 marks]

Reference Document: AS/NZS 3010: 2017 [1 mark]

Clause Number: 3.2.3.2 [2 marks]

Question 17.

Answer: No [2 marks]

Reference Document: AS/NZS 3010: 2017 [1 mark]

Clause Number: 2.7.9 [2 marks]

OR

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

Clause Number: 2.3.3.4(b) [2 marks]

Note: Either Standard is acceptable, marks only awarded once.

Question 18.

Answer: The requirements for synchronisation shall be obtained from the electricity distributor. [2 marks]

Reference Document: AS/NZS 3010 [1 mark]

Clause Number: 2.4.3 [2 marks]

Question 19 – Part (a).

Answer: c) [2 marks]

Reasoning: Fault occurs on Generator Active to frame that is at earth potential, fault current must flow through generator earth and then submain earth conductor to MEN connection at main Switchboard and then return via submain Neutral and the Generator Neutral to generator windings to operate protective device

Question 19 – Part (b).

Part i) Calculate conductor impedances:

AS/NZS 3008.1.1: 2025 Table 4.5(A)

Rc = 0.668 Ω/km for 35mm^2 cables [1 mark]

Rc = 2.33 Ω/km for 10mm^2 cables [1 mark]

Generator internal cabling:

Active: 35mm^2 Table 4.5(A)	1m x 0.668/1000 = 0.00067Ω	[1 mark]
Neutral: 35mm^2 Table 4.5(A)	1m x 0.668/1000 = 0.00067Ω	[1 mark]

Generator Mains (Consumer mains):

Active: 35mm^2 Table 4.5(A)	25m x (0.668/1000) = 0.01670Ω	
Neutral: 35mm^2 Table 4.5(A)	25m x (0.668/1000) = 0.01670Ω	[1 mark]
Earth: 10mm^2 Table 4.5(A)	27m x (2.33/1000) = 0.06291Ω	[1 mark]

Tenancy Submains:

Active: 35mm^2 Table 4.5(A)	35m x (0.668/1000) = 0.02338Ω	
Neutral: 35mm^2 Table 4.5(A)	35m x (0.668/1000) = 0.02338Ω	[1 mark]
Earth: 10mm^2 Table 4.5(A)	35m x (2.33/1000) = 0.08155Ω	[1 mark]

Fault current path impedance

Generator Active Internal + Generator Mains Earth + Submains Earth + Submains Neutral + Generator Mains Neutral + Generator Neutral Internal

0.00067Ω + 0.06291Ω + 0.08155Ω + 0.02338Ω + 0.01670Ω + 0.00067Ω =

Total fault current path impedance = 0.18588 Ω [1 mark]

Part ii) Calculate Generator internal impedance

Z int = Uo / Ia = 230V/3250A = 0.07077 Ω [1 mark]

The installation is not compliant. Fault loop impedance fails as the fault loop cable resistances are greater than the internal resistance of the Generator and will not provide enough fault current to the Generator protective device to operate in the fault condition. [1 mark]

Question 20.

Is this compliant? No [2 marks]

Clause Number: 2.7.1 and Figure 2.1 note 1. [1 mark]