Started on	Tuesday, 25 March 2025, 5:35 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:35 PM
Time taken	9 secs
Grade	**0.00** out of 15.00 (**0**%)

Question 1

Not answered

Marked out of 1.00

When installing PV arrays, a typical control measure used to reduce the risk of falling from a roof top is:

a. the use of a safety observer
b. conducting work from an EWP
c. the use of a safety harness
d. the use of non-slip sandshoes

Your answer is incorrect.

Safety harnesses are typically used to reduce the risk of falling from heights when installing PV arrays on roofs.

Refer to content page 7.1 for more information.

The correct answer is: the use of a safety harness

Question 2

Not answered

Marked out of 1.00

What is the maximum open circuit voltage for a domestic grid-connected PV power system, according to AS/NZS 5033:2021?

a. 750 V d.c.
b. 1000 V d.c.
c. 1,500 V d.c.
d. 600 V d.c.

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Clause 3.1

The correct answer is: 1000 V d.c.

Question 3

Not answered

Marked out of 1.00

A hazard that is typically present when installing a PV array on a steel sheet roof is:

a. toxic gases
b. ultraviolet radiation
c. traffic
d. corrosive chemicals

Your answer is incorrect.

UV radiation from the sun can result in sunburn and sun stroke. Control measures including UV protective clothing, polarised sunglasses, hat and sun cream should be used when working outdoors.

Refer to content page 7.1 for more information.

The correct answer is: ultraviolet radiation

Question 4

Not answered

Marked out of 1.00

A hazard that is typically present when installing a PV array on a tile roof is:

a. d.c. current
b. a.c. current
c. all of these
d. falling from heights

Your answer is incorrect.

Hazards that may typically be encountered when installing PV arrays on roofs include: working at heights (working on the roof), manual handling (handling PV modules), UV radiation (from the sun), d.c. current (produced by illuminated modules), a.c. current (flowing through consumer's mains or other installation cables) and asbestos (roofing materials).

Refer to content page 7.1 for more information.

The correct answer is: all of these

Question 5

Not answered

Marked out of 1.00

A low voltage PV array consisting of two parallel strings:

a. must not be installed within 1.5 m of the PCE
b. does not require a roof-top load break disconnector
c. requires a roof-top load break disconnector
d. must not have a maximum d.c. voltage exceeding 250 V

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Figure 4.2

The correct answer is: does not require a roof-top load break disconnector

Question 6

Not answered

Marked out of 1.00

According to AS/NZS 5033:2021, a conduit enclosing PV wiring running between an array and an inverter is required to be:

a. identified with labels marked with the word 'SOLAR'
b. not be longer than 3 m
c. identified with labels marked with the words 'ALTERNATIVE SUPPLY, DO NOT DISCONNECT'
d. installed out of reach

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Clause 5.3.1

The correct answer is: identified with labels marked with the word 'SOLAR'

Question 7

Not answered

Marked out of 1.00

In a grid-connected PV installation, when is the 'grid protection' required to operate?

a. All of these
b. When the PV array operates outside of preset voltage limits
c. When the grid supply is disrupted
d. When an overcurrent occurs

Your answer is incorrect.

Refer to content page 7.2 and AS/NZS 4777.2:2020 Clause 4.1

The correct answer is: When the grid supply is disrupted

Question 8

Not answered

Marked out of 1.00

The compliance and functionality of a low voltage grid-connected PV installation must be verified in accordance with:

a. AS/NZS 5033
b. AS/NZS 4777.1
c. All of these
d. AS/NZS 3000

Your answer is incorrect.

AS/NZS 4777.1, AS/NZS 5033, and AS/NZS 3000 all contain requirements for the installation of the wiring and equipment of low voltage grid-connected PV systems, each of which require verification in accordance with their respective standards.

The correct answer is: All of these

Question 9

Not answered

Marked out of 1.00

Which of the following specific requirements applies to multiple mode grid-connected inverters with independent supply functionality?

a. The inverter grid-interactive port submain must be RCD protected
b. All of these
c. Circuits supplied by the inverter must be RCD protected in accordance with AS/NZS 3000
d. The independent supply must satisfy the conditions of SELV

Your answer is incorrect.

Refer to AS/NZS 4777.1:2024 Clause 5.4.6.4

The correct answer is: Circuits supplied by the inverter must be RCD protected in accordance with AS/NZS 3000

Question 10

Not answered

Marked out of 1.00

In a grid-connected PV installation, 'grid protection' is required to operate:

a. All of these
b. to prevent islanding
c. if the grid supply is disrupted
d. if the grid supply voltage operates outside preset limits

Your answer is incorrect.

Refer to content page 7.2 and AS/NZS 4777.2:2020 Clause 4.1

The correct answer is: All of these

Question 11

Not answered

Marked out of 1.00

In a grid-connected PV installation, 'grid protection' is required to operate:

a. to protect the installation against surge currents
b. to prevent islanding
c. All of these
d. in the event of an earth fault

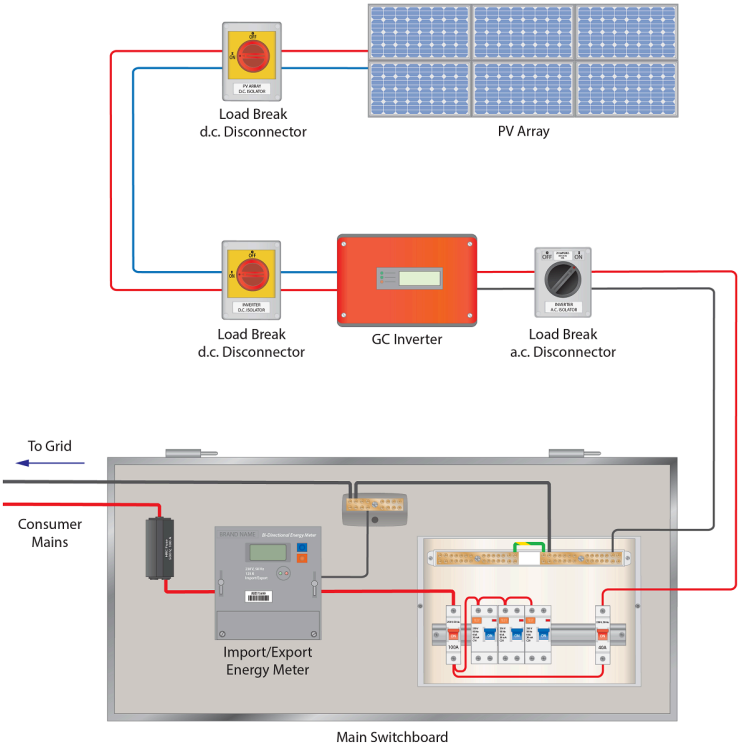
Your answer is incorrect.

Refer to content page 7.2 and AS/NZS 4777.2:2020 Clause 4.1The correct answer is: to prevent islanding

Question 12

Not answered

Marked out of 1.00



In relation to the installation pictured above, which of the following signs is suitable to be located at the installation main switchboard to satisfy AS/NZS 4777.1 signage requirements?

a.

b.

c.

d.

Your answer is incorrect.

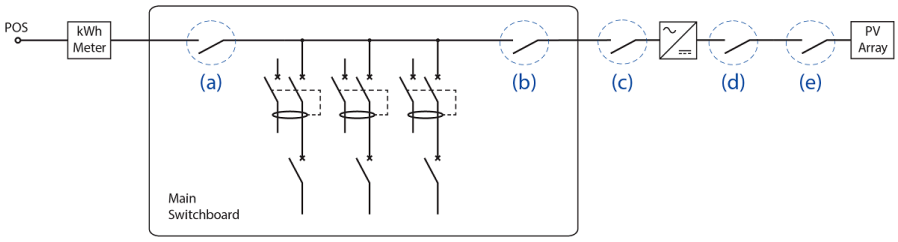
Refer to AS/NZS 4777.1:2024 Clause 6.2 (a) and Figure A1

The correct answer is:

Question 13

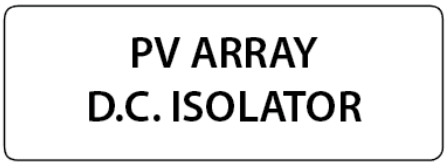
Not answered

Marked out of 1.00

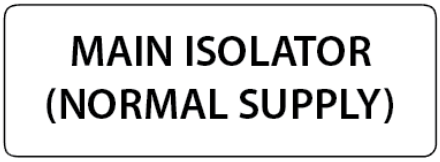


Which of the following labels is suitable for identifying switch (b) in the grid-connected PV installation pictured above?

a.



b.



c.

d.

Your answer is incorrect.

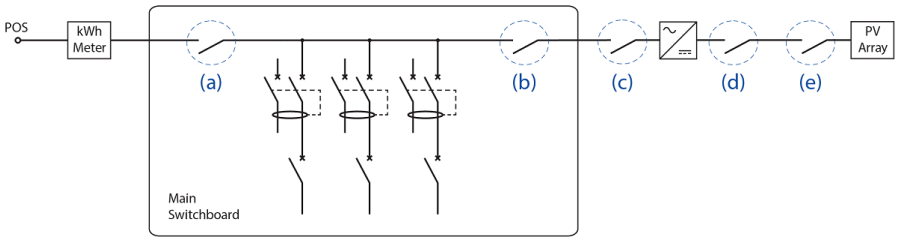
Refer to AS/NZS 4777.1:20124 Clause 6.3 (a)

The correct answer is:

Question 14

Not answered

Marked out of 1.00



Which of the following requirements applies to switch (b) in the grid-connected PV installation pictured above?

a. Must provide both active and passive grid protection

b. Must be an RCD with a rated residual current not greater than 30 mA

c. Must be able to be secured in the open position

d. Must automatically disconnect in the event of overcurrent

Your answer is incorrect.

Refer to AS/NZS 4777.1 Clauses 3.4.3.1 (b)

The correct answer is: Must be able to be secured in the open position

Question 15

Not answered

Marked out of 1.00

The requirements for signage at switchboards supplied from grid-connected inverter systems can be found in:

a. AS/NZS 4777.1:2024 Section 6

b. AS/NZS 4777.2:2020 Appendix A

c. AS/NZS 4777.1:2016 Appendix B

d. AS/NZS 4777.2:2020 Section 5

Your answer is incorrect.

Refer to AS/NZS 4777.1:2024 Section 6

The correct answer is: AS/NZS 4777.1:2024 Section 6

Started on	Tuesday, 25 March 2025, 5:41 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:41 PM
Time taken	8 secs
Grade	**0.00** out of 26.00 (**0**%)

Question 1

Not answered

Marked out of 6.00

Hazards commonly associated with installing PV arrays on roofs include:

- a. Asbestos
- b. Chemical burns
- c. a.c. current
- d. Working at heights
- e. Fire
- f. UV radiation
- g. Manual handling
- h. d.c. current

Your answer is incorrect.

Hazards that may typically be encountered when installing PV arrays on roofs include:

- Working at heights (working on the roof)
- Manual handling (handling PV modules)
- UV radiation (from the sun)
- d.c. current (produced by illuminated modules)
- a.c. current (flowing through consumer's mains or other installation cables)
- asbestos (roofing materials).

Refer to content page 7.1 for more information.

The correct answers are: Working at heights, Manual handling, UV radiation, d.c. current, a.c. current, Asbestos

Question 2

Not answered

Marked out of 4.00

Match each hazard/risk, associated with the installation of PV arrays on roofs, to an appropriate control measure:

Electric shock from energised overhead lines	Choose...
Falling from heights	Choose...
Sunburn or sunstroke	Choose...
Sprains and strains from manually handling PV modules	Choose...

Your answer is incorrect.

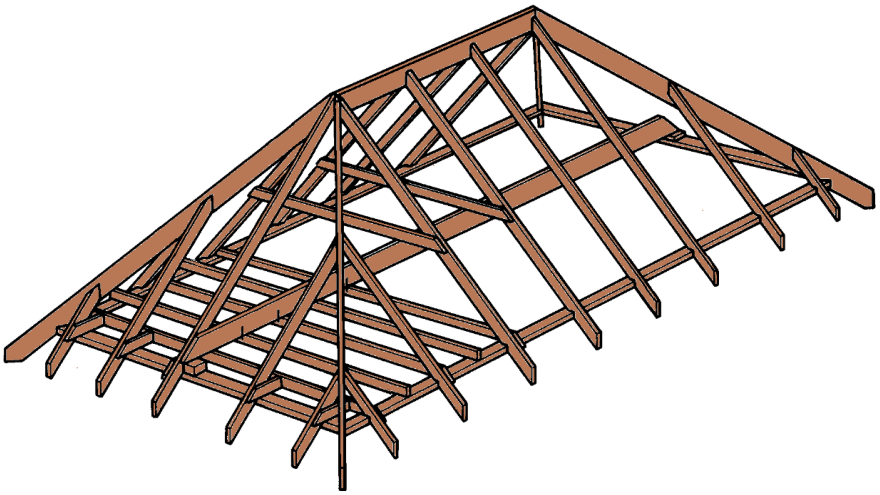
Refer to content page 7.1 and information provided by the Work Health and Safety regulator in your State or Territory.

The correct answer is: Electric shock from energised overhead lines → Awareness and the establishment of exclusion zones, Falling from heights → Safety harness and non-slip footwear, Sunburn or sunstroke → Sun cream, sunglasses, hat and UV protective clothing, Sprains and strains from manually handling PV modules → Correct lifting techniques and/or mechanical lifting aids

Question 3

Not answered

Marked out of 6.00



Which of the following roofing materials are typically used with the type of roof structure pictured above?

- a. Slate tiles
- b. Clay tiles
- c. Steel sheet
- d. Plasterboard sheet
- e. Concrete slab
- f. Asphalt shingles
- g. Ceramic tiles
- h. Concrete tiles

Your answer is incorrect.

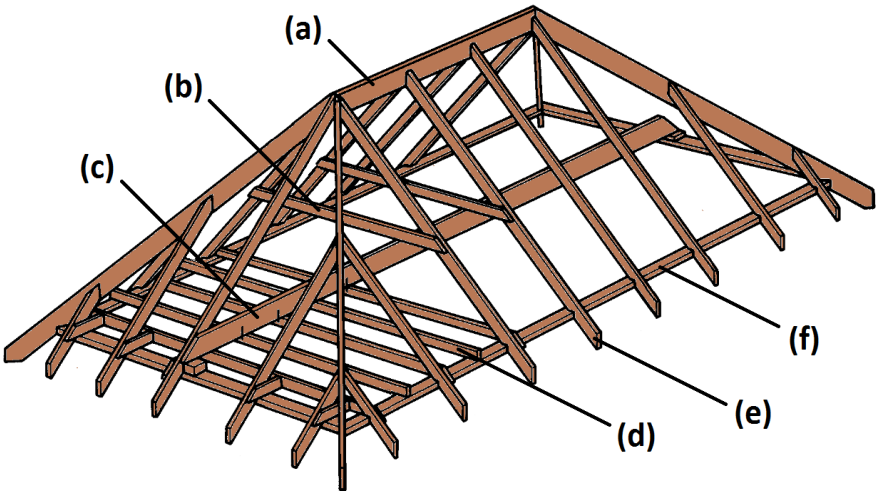
Roofing materials typically used with frame roofs include various tiles, various shingles and various types of steel sheet. Refer to content page 7.1 for more information.

The correct answers are: Ceramic tiles, Steel sheet, Clay tiles, Concrete tiles, Slate tiles, Asphalt shingles

Question 4

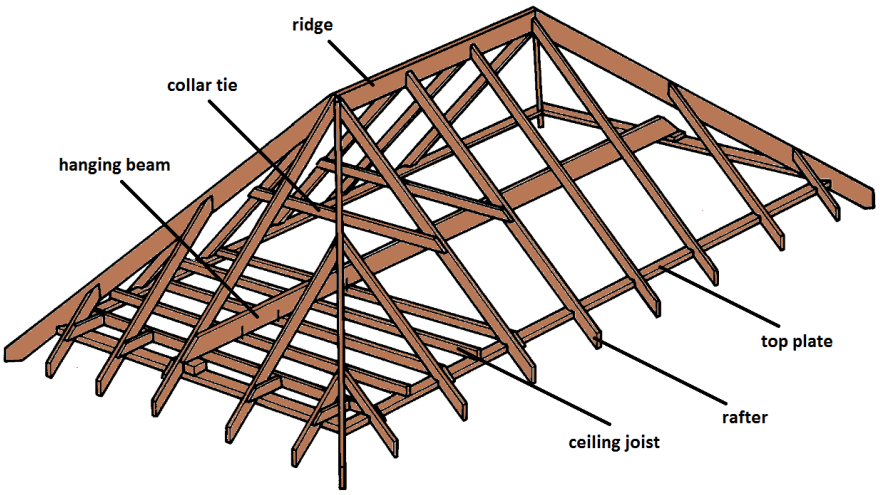
Not answered

Marked out of 6.00



In relation to the roof structure diagram pictured above, select the correct name for the timbers indicated:

- (a): ✖ .
- (b): ✖ .
- (c): ✖ .
- (d): ✖ .
- (e): ✖ .
- (f): ✖ .



Refer to content page 7.1 for more information.

Question 5

Not answered

Marked out of 1.00

When mounting a PV array on a tile roof, the mounting system brackets should be fixed directly to [ ] ✖ .

When mounting a PV array onto a slab roof, the mounting system brackets are fixed directly to [ ] ✖ using suitable [ ] ✖ .

Refer to content page 7.1

Question 6

Not answered

Marked out of 3.00

When mounting a PV array on a steel roof, the brackets are fixed to the [ ] ✖ by screwing through the [ ] ✖ at the appropriate points.

Care must be taken to ensure that all holes are appropriately sealed to maintain [ ] ✖ .

Brackets for fixing PV array mounting systems to steel roofing typically sit on the surface of the roof, and are fastened to the structural beams by screws penetrating the roofing material.

Refer to content page 7.1 for more information.

Started on	Tuesday, 25 March 2025, 5:42 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:42 PM
Time taken	8 secs
Grade	**0.00** out of 16.00 (**0**%)

Question 1

Not answered

Marked out of 6.00

Identify the AS/NZS 5033:2021 clauses that relate to each item.

Labelling of a PV disconnection device	Choose...
Installation of PV system cables	Choose...
Requirements for overcurrent protection	Choose...
Periodic maintenance recommendations	Choose...
Installation of PV array earthing conductors	Choose...
Maximum voltage limits for PV installations	Choose...

Your answer is incorrect.

Refer to the relevant clauses in AS/NZS 5033:2021

The correct answer is: Labelling of a PV disconnection device → 5.5.2, Installation of PV system cables → 4.4.3, Requirements for overcurrent protection → 3.3.4, Periodic maintenance recommendations → D.2, Installation of PV array earthing conductors → 4.6.6, Maximum voltage limits for PV installations → 3.1

Question 2

Not answered

Marked out of 2.00

Complete the following statements regarding AS/NZS 5033:2021 requirements:

a) The calculated maximum d.c. voltage of a domestic PV array is not permitted to exceed ✖ V d.c.

b) The calculated maximum d.c. voltage of a non-domestic PV array is not permitted to exceed ✖ V d.c.

Refer to AS/NZS 5033:2021 Clause 3.1

Question 3

Not answered

Marked out of 1.00

AS/NZS 5033:2021 Clause 4.4.1 requires that all PV system wiring is installed in accordance with ✖ .

Refer to AS/NZS 5033:2021 Clause 4.4.1

Question 4

Not answered

Marked out of 5.00

Identify the AS/NZS 4777.1:2024 clauses that relate to each item.

Connection of an EV to a grid-connected IES	Choose...
Acceptable installation methods for grid-connected inverter wiring systems	Choose...
Requirements for overcurrent protection of an independent supply	Choose...
Maximum phase imbalance for a multiphase IES with a capacity greater than 50 kVA	Choose...
Additional verification requirements for an IES alternative supply	Choose...

Refer to the relevant clauses in AS/NZS 4777.1:2024

The correct answer is: Connection of an EV to a grid-connected IES → 4.2, Acceptable installation methods for grid-connected inverter wiring systems → 3.3.2, Requirements for overcurrent protection of an independent supply → 5.4.3, Maximum phase imbalance for a multiphase IES with a capacity greater than 50 kVA → C.3.3, Additional verification requirements for an IES alternative supply → 8.3.3

Question 5

Not answered

Marked out of 1.00

AS/NZS 4777.1:2016 2024 Section 2 3 states that grid connected inverter systems IES must be installed in accordance with [ ] ✖ , except as varied where modified by AS/NZS 4777.1.

According to AS/NZS 4777.1:2024, an RCD [ ] ✖ connected between a grid-connected inverter and the connecting switchboard, [ ] ✖ .

Refer to AS/NZS 4777.1:2024 Clauses 3.1 and 3.4.4.

Question 6

Not answered

Marked out of 1.00

AS/NZS 4777.2:2020 requires that grid protection shall be provided by a device that operates:

- a. in the event of a short-circuit
- b. if the grid supply is disrupted
- c. if the grid supply voltage goes outside preset operating parameters
- d. in the event of an inverter overload
- e. in the event of excessive earth leakage
- f. if the grid supply frequency goes outside preset operating parameters
- g. when the demand response mode DRM 0 is asserted

Your answer is incorrect.

Refer to AS/NZS 4777.2:2020 Clause 4.1

The correct answers are: if the grid supply is disrupted, if the grid supply frequency goes outside preset operating parameters, when the demand response mode DRM 0 is asserted, if the grid supply voltage goes outside preset operating parameters

Started on	Tuesday, 25 March 2025, 5:42 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:42 PM
Time taken	14 secs
Grade	**0.00** out of 15.00 (**0**%)

Question 1

Not answered

Marked out of 2.00

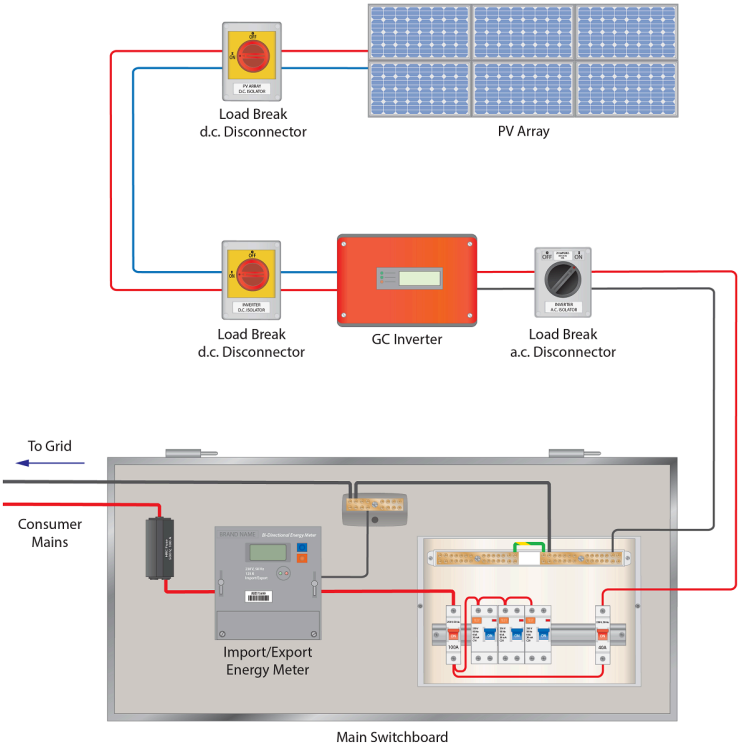
The requirements for labelling a switchboard that is directly connected to a grid-connected inverter system are found in [ ] ✖ Clause [ ] ✖ .

Refer to AS/NZS 4777.1:2024 Clause 6.3

Question 2

Not answered

Marked out of 1.00



In relation to the installation pictured above, which of the following signs is suitable to be located at the installation main switchboard to satisfy AS/NZS 4777.1 signage requirements?

a.

b.

c.

d.

Your answer is incorrect.

Refer to AS/NZS 4777.1:2024 Clause 6.3 (g) and Figure A1.3

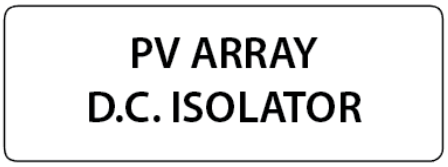
The correct answer is:

Question 3

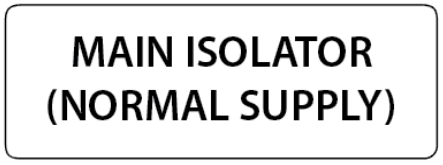
Not answered

Marked out of 1.00

Which of the following labels is suitable for identifying the main switch of a grid-connected PV system, in accordance with AS/NZS 4777.1?

a. 

b. 

c. 

d. 

Your answer is incorrect.

Refer to AS/NZS 4777.1:2024 Clause 6.3 (a) and Figure A.4

The correct answer is:

Question 4

Not answered

Marked out of 2.00

AS/NZS 5033:2021 requires that PV cables and wiring enclosures, such as conduit, must be identified with permanent labels with the word [ ] ✖ attached at intervals not exceeding [ ] ✖ .

Refer to AS/NZS 5033:2021 Clause 5.3.1.1 (a)

Question 5

Not answered

Marked out of 4.00

Which of the following additional requirements apply to grid-connected multiple mode inverters capable of providing an independent supply?

- a. A warning sign must be provided at the MSB stating that neutral and earthing circuits may be live under normal and fault conditions
- b. Arrangements must be made to ensure the continuity of the neutral conductor in the event that the inverter grid protection operates
- c. The grid protection device shall operate in the active, neutral and protective earthing conductors
- d. The grid protection device shall operate in both the active and neutral conductors
- e. The independent supply port of the inverter must be provided with a main isolator
- f. Circuits supplied by the inverter must be RCD protected in accordance with AS/NZS 3000
- g. Circuits supplied from the standalone supply must not be RCD protected
- h. The grid protection device shall be a semiconductor device

Refer to AS/NZS 4777.1:2024 Clauses 5.4.2.1, 5.4.3, 5.4.6.4, 6.8, and AS/NZS 4777.2:2020 Clause 3.4

The correct answers are: The independent supply port of the inverter must be provided with a main isolator, Arrangements must be made to ensure the continuity of the neutral conductor in the event that the inverter grid protection operates, Circuits supplied by the inverter must be RCD protected in accordance with AS/NZS 3000, A warning sign must be provided at the MSB stating that neutral and earthing circuits may be live under normal and fault conditions

Question 6

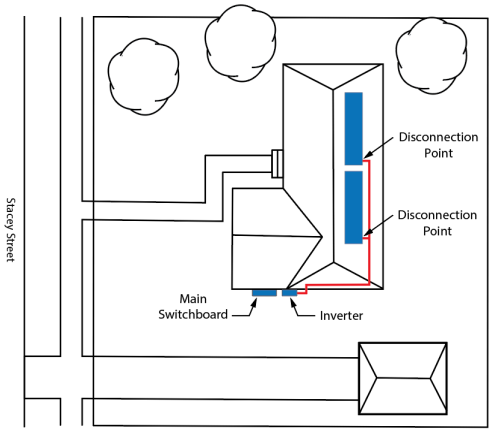
Not answered

Marked out of 5.00

Identify how each of the following types of labels should be applied/located, as per with AS/NZS 5033:2021 requirements.

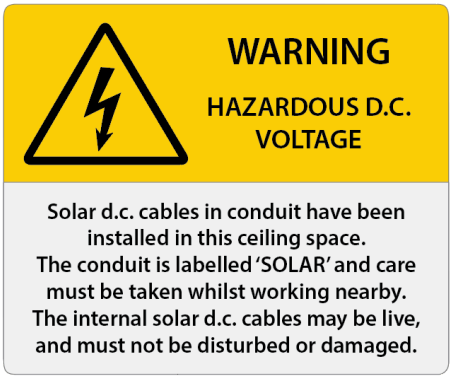
Choose...

Choose...



Choose...

Choose...



Choose...

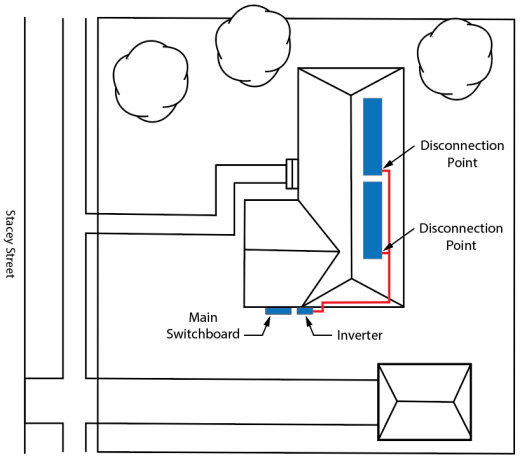
Your answer is incorrect.

Refer to AS/NZS 5033:2021Section 5 and Appendix A

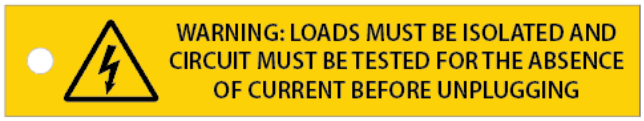
The correct answer is:

→ Required on PV d.c. wiring system junction boxes,

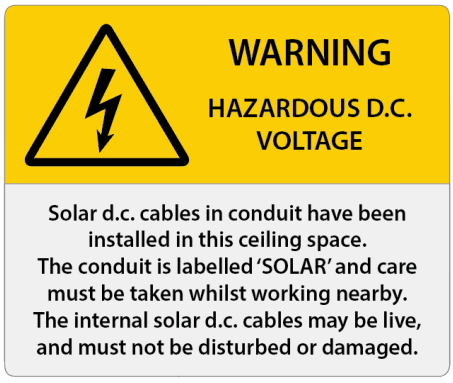
→ Required on or adjacent to the main switchboard or metering panel,



→ Required at the main switchboard, meter box or fire panel,



→ Required within 100 mm of a string disconnection point,



→ Required adjacent to entries to roof/floor spaces containing PV d.c. wiring systems

Started on	Tuesday, 25 March 2025, 5:35 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:35 PM
Time taken	7 secs
Grade	**0.00** out of 20.00 (**0**%)

Question 1

Not answered

Marked out of 1.00

Which of the following is a hazard that may be encountered during the isolation of a low voltage PV array?

a. All of these

b. d.c. arcing

c. Working at heights

d. Rise in voltage

Your answer is incorrect.

Isolation of the array will typically involve working at heights.

The output voltage of the array will rise when isolated from the load.

d.c. has a tendency to arc when the flow of current is stopped. Installation disconnectors must be correctly selected with suitable breaking capacities and voltage ratings.

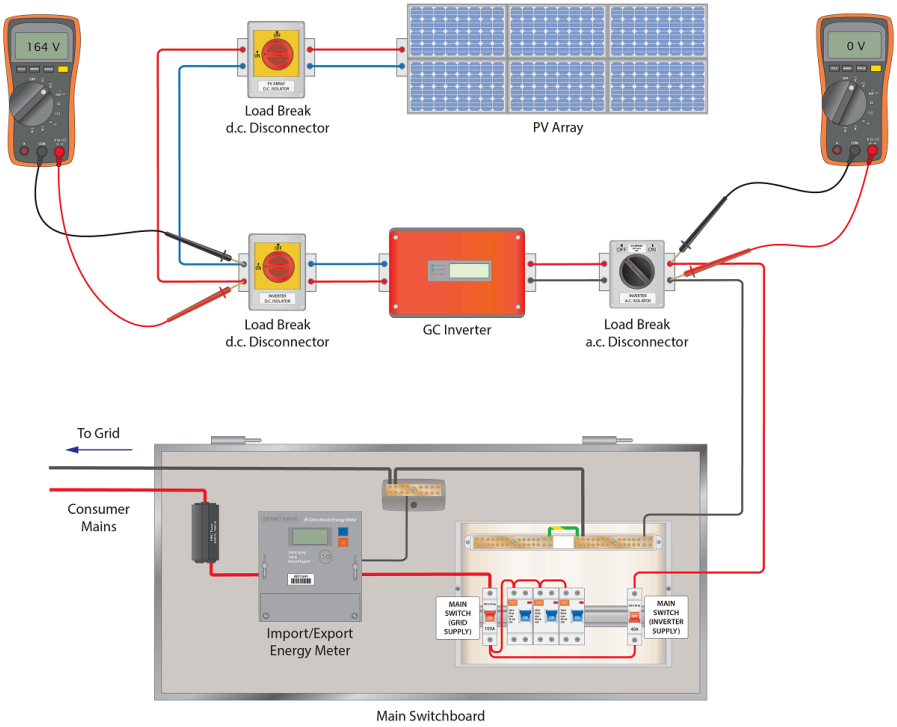
Refer to content page 6.1 for more information.

The correct answer is: All of these

Question 2

Not answered

Marked out of 1.00



The power output of the PV array pictured above has dropped to zero.
Given the voltage measurements indicated, what is the most likely root cause of the problem?

- a. A high impedance on the service neutral
- b. Array interconnect wiring has come loose
- c. The grid supply has been disrupted
- d. The inverter has blown a capacitor

Your answer is incorrect.

Refer to content page 6.3

The correct answer is: The grid supply has been disrupted

Question 3

Not answered

Marked out of 1.00

Consider that you need to isolate a grid-connected PV system in order to carry out maintenance work. What is the first thing you should do when you arrive on-site?

a. Test for voltage at the inverter
b. Carry out a risk assessment
c. Check the modules for soiling
d. Isolate each isolation device

Your answer is incorrect.

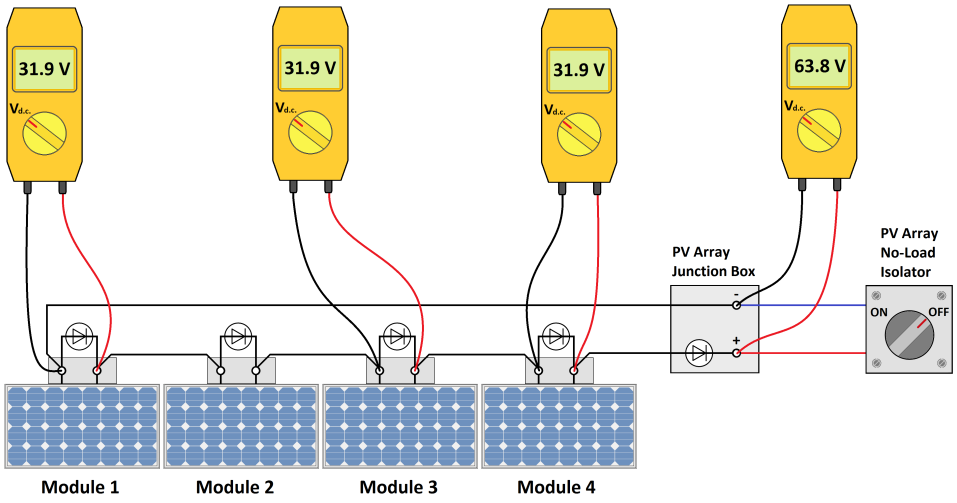
A risk assessment should always be carried out prior to commencing work.
Refer to content page 6.1 for more information.

The correct answer is: Carry out a risk assessment

Question 4

Not answered

Marked out of 1.00



The diagram above shows a PV array, consisting of four 180 W modules, undergoing voltage testing.
What do the test results indicate?

a. The bypass diodes of modules 1, 3 and 4 have been connected in reverse
b. The array is functioning correctly
c. Module 2 has been connected with incorrect polarity
d. Module two bypass diode is shorted

Your answer is incorrect.

Module 1 + module 2 + module 3 + module 4 = string voltage
63.8 – 31.9 – 31.9 – 31.9 = -31.9 V

The correct answer is: Module 2 has been connected with incorrect polarity

Question 5

Not answered

Marked out of 1.00

Insulation resistance testing of array interconnect wiring is carried out between the array positive conductor and earth, and the array negative conductor and earth:

a. with all strings connected
b. when string open-circuit voltage readings are being taken
c. with all strings disconnected
d. prior to testing module polarity

Your answer is incorrect.

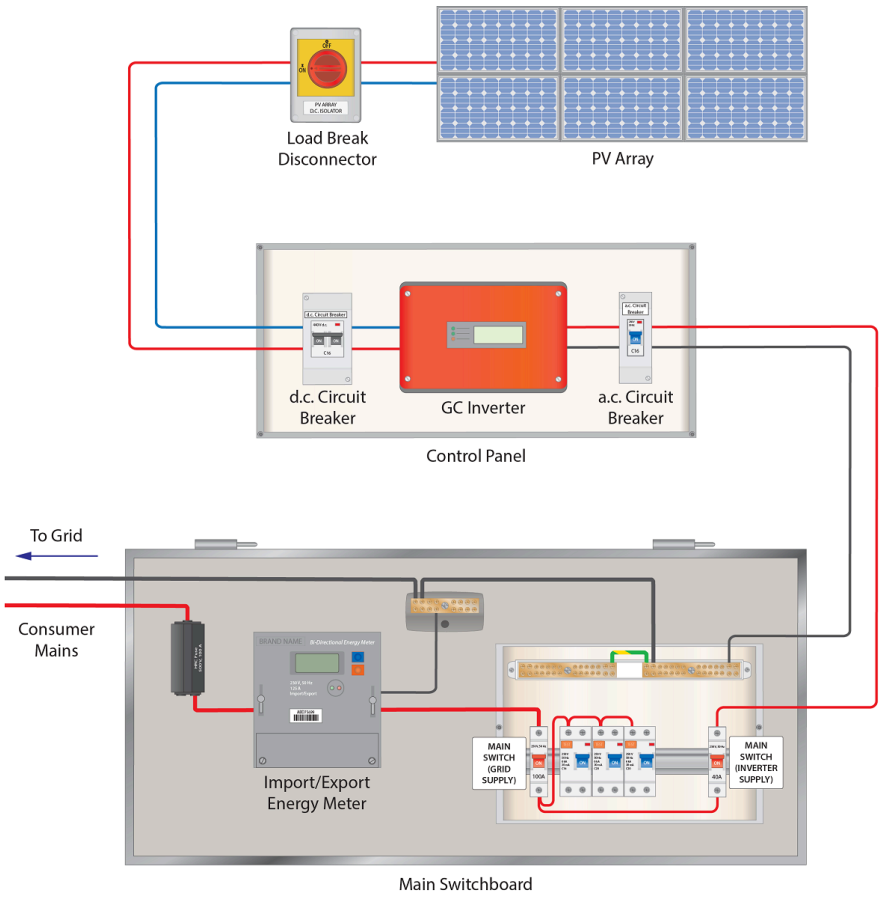
Refer to AS/NZS 5033:2021 Clauses 4.7.3.3 and 6.3.2

The correct answer is: with all strings connected

Question 6

Not answered

Marked out of 1.00



Which of the following requirements apply to the PV array switch disconnector in the PV system pictured above?

- a. Must be capable of interrupting the PV array prospective fault current
- b. Must not be polarised
- c. Must have a utilisation of DC-PV2
- d. All of these

Your answer is incorrect.

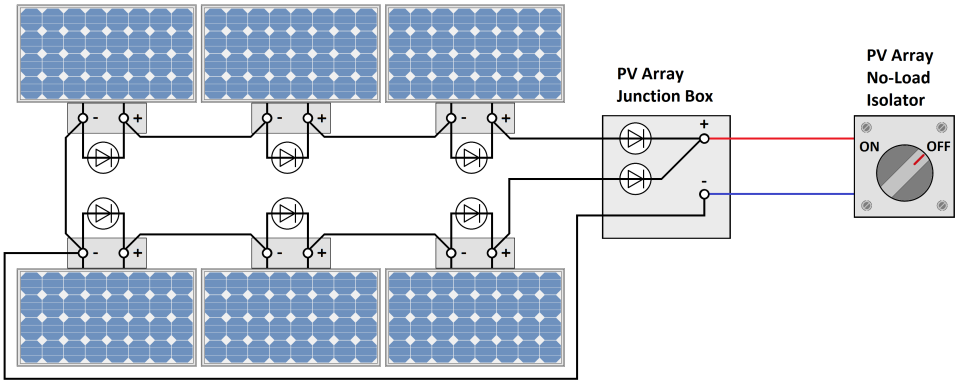
Refer to AS/NZS 5033:2021 Clause 4.3.4.2.2

The correct answer is: All of these

Question 7

Not answered

Marked out of 1.00



The PV array pictured above consists of six modules, each having a maximum voltage (VMOD MAX) of 45 V d.c..
In order to verify the insulation resistance of the array interconnect wiring:

a. at least 1 MΩ should be measured using a test voltage of 1000 V
b. at least 1 MΩ should be measured using a test voltage of 250 V
c. at least 0.5 MΩ should be measured using a test voltage of 250 V
d. at least 1 MΩ should be measured using a test voltage of 500 V

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Table 4.7.
The array consists of two strings, each having three modules, resulting in a maximum array voltage of 135 V d.c.
Therefore according to Table 4.7, a test voltage of 500 V and a minimum IR of 1 MΩ is required.

The correct answer is: at least 1 MΩ should be measured using a test voltage of 500 V

Question 8

Not answered

Marked out of 1.00

Which of the following are required to be documented in the PV system manual, provided to the customer at completion of installation and commissioning activities?

a. All of these are correct
b. Shutdown and isolation procedures
c. Maintenance checklist and schedule
d. Warranty information

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Clause 6.2

The correct answer is: All of these are correct

Question 9

Not answered

Marked out of 1.00

What is the purpose of commissioning PV power systems?

a. All of these
b. To verify system wiring is correctly connected
c. To document initial system performance
d. To ensure connection of the system will not result in danger or damage

Your answer is incorrect.

Refer to content page 6.2

The correct answer is: All of these

Question 10

Not answered

Marked out of 1.00

The most suitable control measure to reduce the risk of electric shock posed by working on low voltage electrical systems is:

a. the use of insulated tools
b. the application of safe isolation LOTO procedures
c. the use of insulated gloves and safety glasses
d. the use of a safety observer

Your answer is incorrect.

Refer to content page 6.1

The correct answer is: the application of safe isolation LOTO procedures

Question 11

Not answered

Marked out of 1.00

Before an energy source is applied to a PV system installation, wiring should be tested to verify:

a. continuity
b. insulation
c. All of these
d. polarity

Your answer is incorrect.

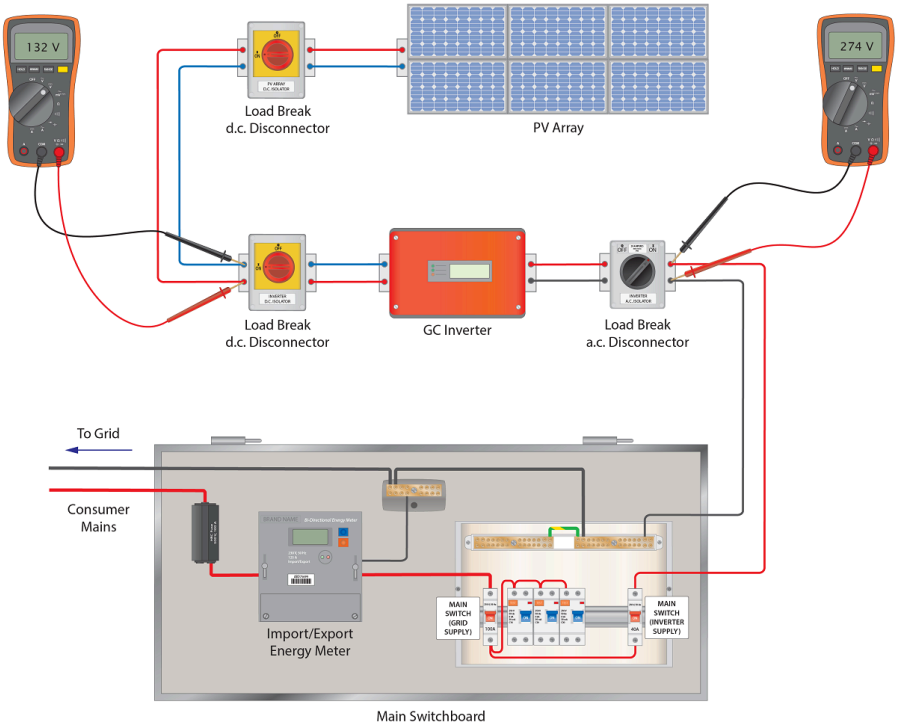
Refer to AS/NZS 3000:2018 Section 8 and content page 6.2

The correct answer is: All of these

Question 12

Not answered

Marked out of 1.00



The power output of the PV array pictured above has dropped to zero. When the current was measured in the positive conductor running between the d.c. isolator and the GC inverter, a reading of zero amperes was taken.
Given these measurements, along with the test results pictured, what is the most likely cause of the problem?

- a. The d.c. isolator is faulty
- b. Shading
- c. Open-circuit d.c. wiring
- d. The inverter grid protection device has tripped

Your answer is incorrect.

Refer to content page 6.3

The correct answer is: The inverter grid protection device has tripped

Question 13

Not answered

Marked out of 1.00

After isolating, locking off and tagging a circuit, you should always test to verify that the circuit is de-energised, and then:

a. place the key to the locking device on top of the switchboard for safe keeping

b. test your test equipment to verify functionality

c. notify the customer that the supply has been de-energised

d. commence work

Your answer is incorrect.

Refer to content 6.1

The correct answer is: test your test equipment to verify functionality

Question 14

Not answered

Marked out of 1.00

Who is permitted to remove a danger tag from a circuit isolation point and re-energise the supply?

a. Any electrician on site

b. The electrician who applied the tag

c. Any of these

d. The principal contractor

Your answer is incorrect.

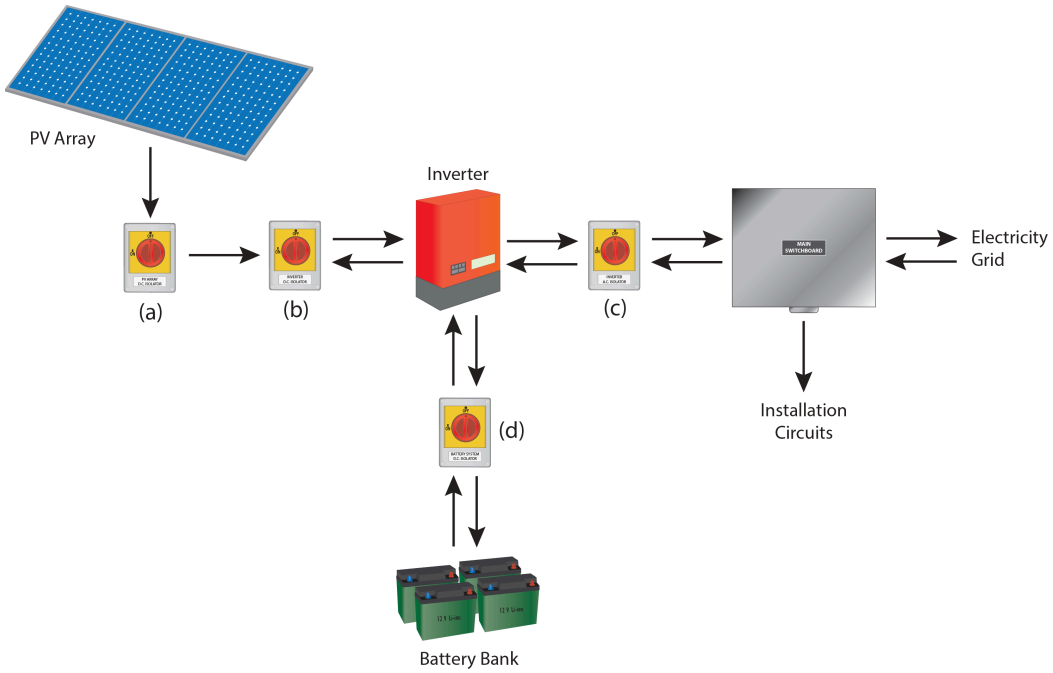
Refer to content 6.1

The correct answer is: The electrician who applied the tag

Question 15

Not answered

Marked out of 1.00



In relation to the installation pictured above, which isolators need to be locked out and tagged, as a minimum, so that repair work can be safely carried out on the inverter?

a. (c) only

b. (b), (c) and (d)

c. (b) and (c) only

d. (a), (b) and (c)

Your answer is incorrect.

Refer to content 6.1

The correct answer is: (b), (c) and (d)

Question 16

Not answered

Marked out of 1.00

Which of the following are required to be documented in the PV system manual, provided to the customer at completion of installation and commissioning activities?

a. Quote for ongoing maintenance

b. Purchase price of the system

c. All of these are correct

d. System performance estimate

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Clause 6.2

The correct answer is: System performance estimate

Question 17

Not answered

Marked out of 1.00

Place the steps in the correct order to indicate the general procedure for restarting an alternative supply system.

Step 1 Choose...

Step 2 Choose...

Step 3 Choose...

Step 4 Choose...

Step 5 Choose...

Your answer is incorrect.

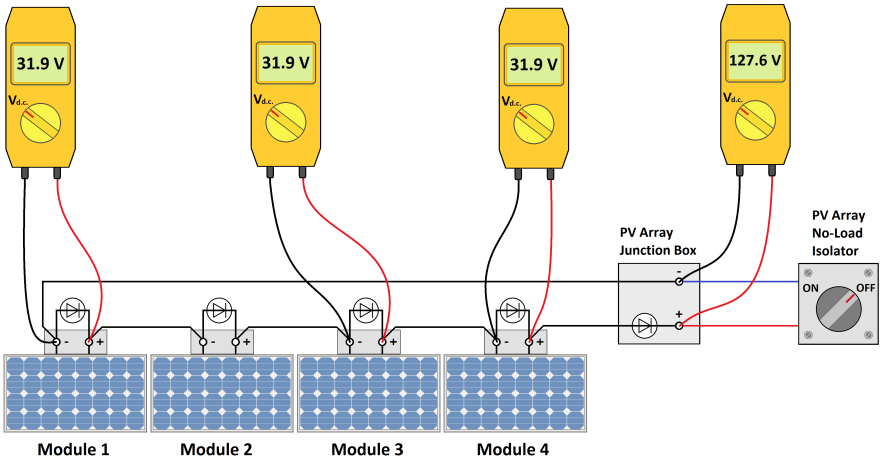
Refer to content page 6.1

The correct answer is: Step 1 → Identify and locate all points of isolation, Step 2 → Notify relevant personnel of your intent to reinstate the supply, Step 3 → Initiate start-up of the energy source (where applicable), Step 4 → Remove isolator lockout devices and tags, and switch on the isolators, Step 5 → Test to verify correct output voltage(s) at the system terminals

Question 18

Not answered

Marked out of 1.00



The diagram above shows a PV array, consisting of four 145 W modules, undergoing voltage testing. What do the test results indicate?

a. The bypass diodes are connected in reverse
b. Module polarity is correct
c. One module is shorted
d. One module is open-circuit

Your answer is incorrect.

Module 1 + module 2 + module 3 + module 4 = string voltage
31.9 + 31.9 + 31.9 + 31.9 = 127.6 V

The correct answer is: Module polarity is correct

Question 19

Not answered

Marked out of 1.00

Place the steps in the correct order to indicate the general procedure for safe isolation of an electrical supply.

Step 1	✖
Step 2	✖
Step 3	✖
Step 4	✖
Step 5	✖
Step 6	✖

Refer to AS/NZS 4836:2023 and content page 6.1

Question 20

Not answered

Marked out of 1.00

PV supply systems should be isolated under:

- a. full-load conditions
- b. no-load conditions
- c. direct supervision
- d. fault conditions

Your answer is incorrect.

Refer to content 6.1

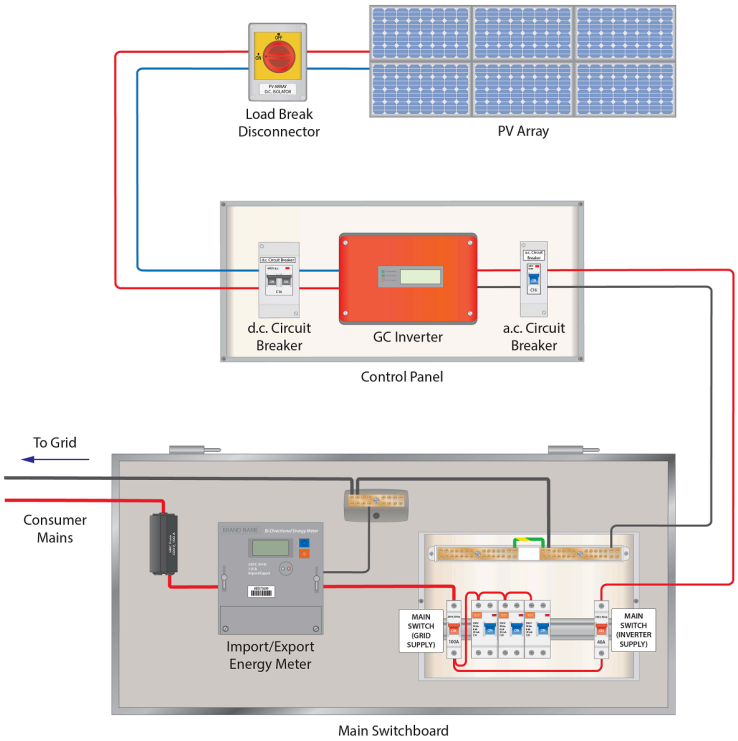
The correct answer is: no-load conditions

Started on	Tuesday, 25 March 2025, 5:43 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:43 PM
Time taken	9 secs
Grade	**0.00** out of 15.00 (**0**%)

Question 1

Not answered

Marked out of 7.00



Arrange the safe isolation procedure into the correct sequence, to carry out routine maintenance on the PV array pictured above.

Step 1	✖
Step 2	✖
Step 3	✖
Step 4	✖
Step 5	✖
Step 6	✖
Step 7	✖

Step 1: a risk assessment should always be carried out prior to commencing work.

Step 2: all isolation points should be located and identified prior to commencing isolation.

Step 3: the person in charge of the installation should be made aware that you intend to isolate the PV system.

Step 4: the line and load sides of the inverter should be isolated, along with the PV array and inverter supply main switch.

Step 5: test equipment should be tested on a known live source to verify functionality prior to testing for isolation, in accordance with AS/NZS 4836.

Step 6: line and load sides of the inverter should be tested for voltage to verify system isolation, in accordance with AS/NZS 4836.

Step 7: test equipment should be tested on a known live source to verify functionality prior to testing for isolation, in accordance with AS/NZS 4836.

Additional - Step 8: the PV modules may need to be covered with a PV blanket to prevent generation.

Question 2

Not answered

Marked out of 2.00

Identify whether or not the following statements are true or false in relation to safe shut-down and isolation of grid-connected PV systems.

PV power systems should only be isolated under full-load conditions.	✖
Isolating a PV array will cause the array voltage to rise.	✖

Refer to content page 6.1

Question 3

Not answered

Marked out of 1.00

What information should you provide on a personal danger tag?

- a. An expected completion date
- b. The time and date of the isolation
- c. Your name
- d. Your contact phone number
- e. Your business/company name
- f. Instructions for re-energising the supply
- g. Your electrical license number

Your answer is incorrect.

Refer to content page 6.1

The correct answers are: Your name, Your contact phone number, Your business/company name, The time and date of the isolation

Question 4

Not answered

Marked out of 4.00

A ✖ voltage tester may read ✖ volts, even when equipment terminals are at 230/400 V a.c.

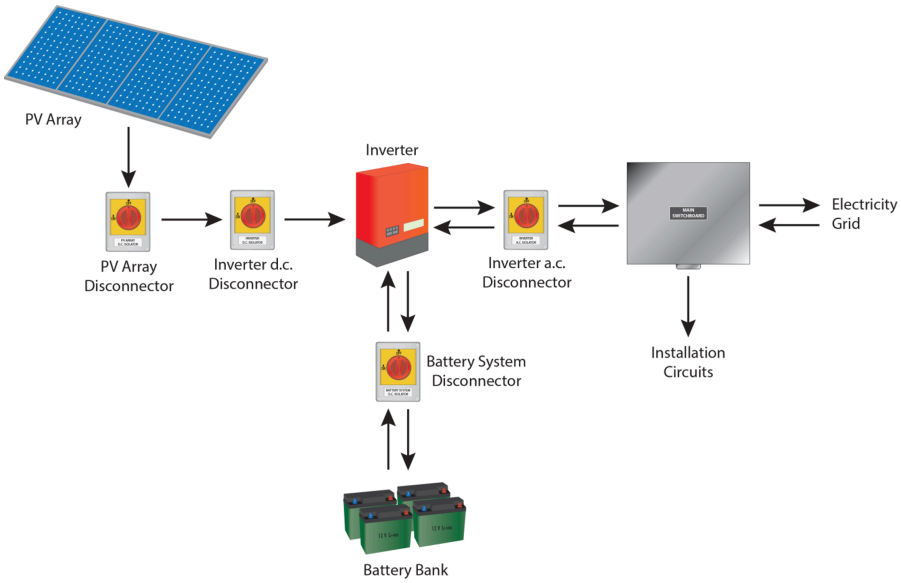
Testing the voltage tester ✖ and after testing for zero volts, reduces your risk of receiving an electric ✖ .

Refer to content page 6.1

Question 5

Not answered

Marked out of 1.00



In relation to the installation pictured above, which disconnectors (isolators) need to be locked out and tagged, as a minimum, so that repair work can be safely carried out on the inverter?

- a. Inverter a.c. disconnector
- b. PV array disconnector
- c. Battery system disconnector
- d. Inverter d.c. disconnector

Your answer is incorrect.

Refer to content page 6.1

The correct answers are: Inverter d.c. disconnector, Inverter a.c. disconnector, Battery system disconnector

Started on	Tuesday, 25 March 2025, 5:43 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:43 PM
Time taken	10 secs
Grade	**0.00** out of 36.00 (**0**%)

Question 1

Not answered

Marked out of 5.00

The purpose of commissioning PV power systems is to:

- Verify that wiring and equipment is installed and connected ✖ .
- Verify that wiring and equipment ✖ .
- Ensure connection to the grid will not result in ✖ .
- ✖ initial system ✖ .

Refer to content page 6.2

Question 2

Not answered

Marked out of 2.00

Requirements for commissioning of PV power systems can be found in:

- AS/NZS 4509.1:2009 Section ✖ , and
- AS/NZS 5033:2021 Clause ✖ .

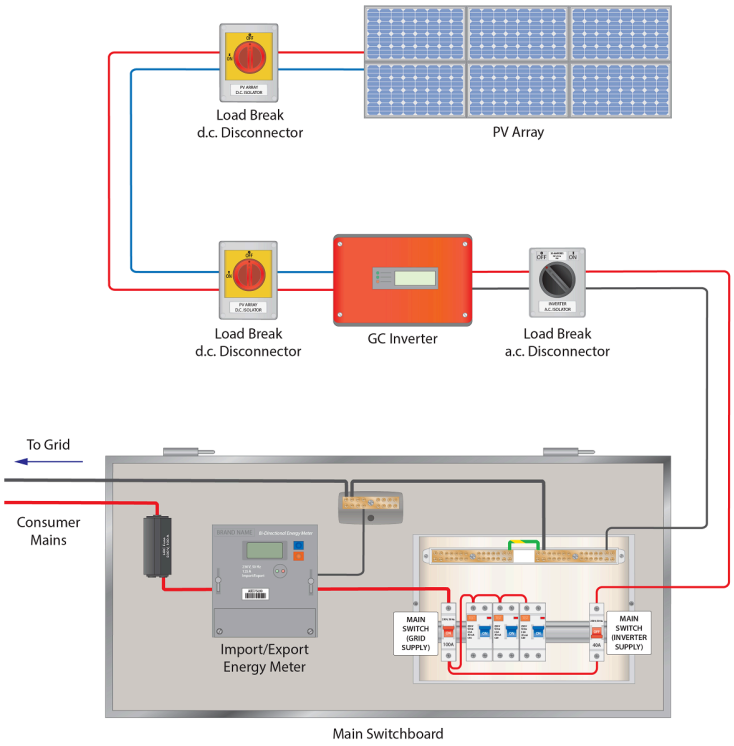
Refer to AS/NZS 4509.1:2009 Section 10 and AS/NZS 5033:2021 Clause 6.3.

Question 3

Not answered

Marked out of 10.00

Arrangement of System Components



Arrange the following items into the correct order to create a commissioning procedure, complying with AS/NZS 5033:2021 and AS/NZS 3000:2018, for the grid-connected PV installation pictured above.

The array has a maximum power of 2.2 kW, and a nominal voltage of 92 V.

Part 1 – System Wiring

Test continuity of wiring between PV array disconnector and inverter and document results	Choose...
Test polarity of wiring between PV array disconnector and inverter and document results	Choose...
Test insulation resistance of wiring between the inverter and solar main switch and document results	Choose...
Test polarity of wiring between solar main switch and kWh meter and document results	Choose...
Test continuity of wiring between inverter and solar main switch and document results	Choose...
Isolate grid supply by removing service fuse in accordance with local SIRs	Choose...
Test polarity of wiring between the inverter and solar main switch and document results	Choose...
Test insulation resistance of wiring between solar main switch and kWh meter and document results	Choose...
Test continuity of wiring between solar main switch and kWh meter and document results	Choose...
Test insulation resistance of wiring between PV array disconnector and inverter and document results	Choose...

Your answer is incorrect.

Refer to AS/NZS 4509.1:2009 Section 10 and AS/NZS 3000:2018 Section 8

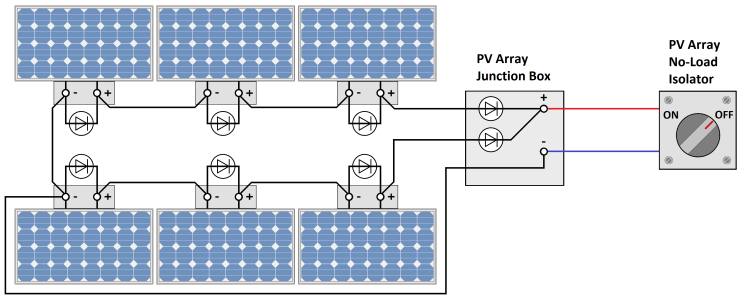
The correct answer is: Test continuity of wiring between PV array disconnector and inverter and document results → Step 1, Test polarity of wiring between PV array disconnector and inverter and document results → Step 3, Test insulation resistance of wiring between the inverter and solar main switch and document results → Step 7, Test polarity of wiring between solar main switch and kWh meter and document results → Step 10, Test continuity of wiring between inverter and solar main switch and document results → Step 5, Isolate grid supply by removing service fuse in accordance with local SIRs → Step 4, Test polarity of wiring between the inverter and solar main switch and document results → Step 9, Test insulation resistance of wiring between solar main switch and kWh meter and document results → Step 8, Test continuity of wiring between solar main switch and kWh meter and document results → Step 6, Test insulation resistance of wiring between PV array disconnector and inverter and document results → Step 2

Question 4

Not answered

Marked out of 11.00

PV String/Array Wiring



Part 2 - PV Array

Isolate PV strings	Choose...
Measure the open-circuit voltage and polarity of each string and document results	Choose...
Measure the open-circuit voltage of the array at the PV array disconnector and document results	Choose...
Test the insulation resistance of wiring between array junction box and PV array disconnector and document results	Choose...
Test continuity of wiring between array junction box and PV array disconnector and document results	Choose...
Test insulation resistance between array negative (-) conductor and earth, and document results	Choose...
Connect strings to the d.c. cabling in the array junction box, ensuring PV array disconnector is in the OFF position	Choose...
Test each string for continuity and document results	Choose...
Test each array earthing conductor for continuity and document results	Choose...
Test insulation resistance between array positive (+) conductor and earth, and document results	Choose...
Measure string short-circuit currents (where required) and document results	Choose...

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Clause 6.3

The correct answer is: Isolate PV strings → Step 11, Measure the open-circuit voltage and polarity of each string and document results → Step 16, Measure the open-circuit voltage of the array at the PV array disconnector and document results → Step 19, Test the insulation resistance of wiring between array junction box and PV array disconnector and document results → Step 15, Test continuity of wiring between array junction box and PV array disconnector and document results → Step 14, Test insulation resistance between array negative (-) conductor and earth, and document results → Step 21, Connect strings to the d.c. cabling in the array junction box, ensuring PV array disconnector is in the OFF position → Step 18, Test each string for continuity and document results → Step 12, Test each array earthing conductor for continuity and document results → Step 13, Test insulation resistance between array positive (+) conductor and earth, and document results → Step 20, Measure string short-circuit currents (where required) and document results → Step 17

Question 5

Not answered

Marked out of 7.00

Part 3 - System Start-Up

Inspect inverter display to verify grid synchronisation	Choose...
Measure d.c. voltage at inverter input and document results	Choose...
Measure a.c. voltage at inverter output and document results	Choose...
Re-energise grid supply in accordance with local supply authority regulations	Choose...
De-energise grid main switch and inspect inverter to verify operation of grid protection	Choose...
Measure operating currents of each string and document results	Choose...
Energise PV array disconnector, d.c. inverter disconnector, a.c. inverter disconnector and solar main switch in accordance with inverter manufacturers start-up guidelines	Choose...

Your answer is incorrect.

Refer to AS/NZS 4509.1:2009 Section 10 and AS/NZS 5033:2021 Clause 6.3

The correct answer is: Inspect inverter display to verify grid synchronisation → Step 24, Measure d.c. voltage at inverter input and document results → Step 25, Measure a.c. voltage at inverter output and document results → Step 26, Re-energise grid supply in accordance with local supply authority regulations → Step 22, De-energise grid main switch and inspect inverter to verify operation of grid protection → Step 27, Measure operating currents of each string and document results → Step 28, Energise PV array disconnector, d.c. inverter disconnector, a.c. inverter disconnector and solar main switch in accordance with inverter manufacturers start-up guidelines → Step 23

Question 6

Not answered

Marked out of 1.00

Which of the following are required to be documented in the PV system manual, provided to the customer at completion of installation and commissioning activities?

- a. Disconnection device's locations and cable routing
- b. Installed equipment and associated manufacturer's manuals
- c. System diagram(s)
- d. Maintenance checklist and schedule
- e. Procedures in the event of an earth fault alarm
- f. System ratings and commissioning date
- g. Warranty information
- h. System performance estimate
- i. Commissioning records
- j. Shutdown and isolation procedures

Your answer is incorrect.

Refer to AS/NZS 5033:2021 Clause 6.2

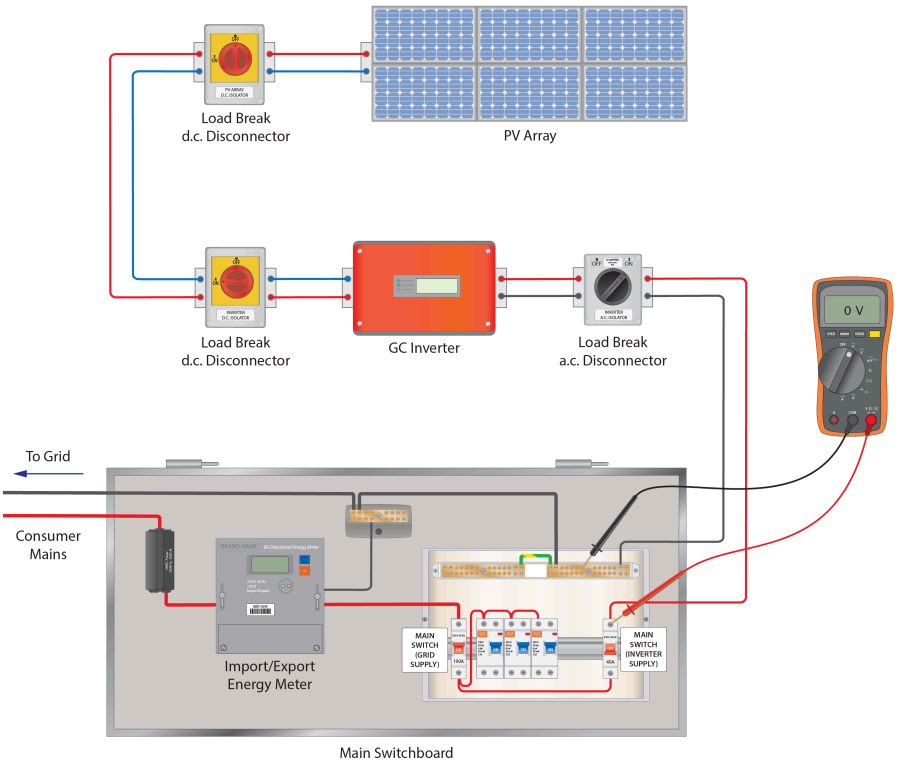
The correct answers are: System ratings and commissioning date, Installed equipment and associated manufacturer's manuals, Procedures in the event of an earth fault alarm, Shutdown and isolation procedures, System diagram(s), Disconnection device's locations and cable routing, System performance estimate, Maintenance checklist and schedule, Commissioning records, Warranty information

Started on	Tuesday, 25 March 2025, 5:43 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 5:44 PM
Time taken	8 secs
Grade	**0.00** out of 15.00 (**0**%)

Question 1

Not answered

Marked out of 1.00



Examine the diagram above, showing a PV system undergoing operational testing.

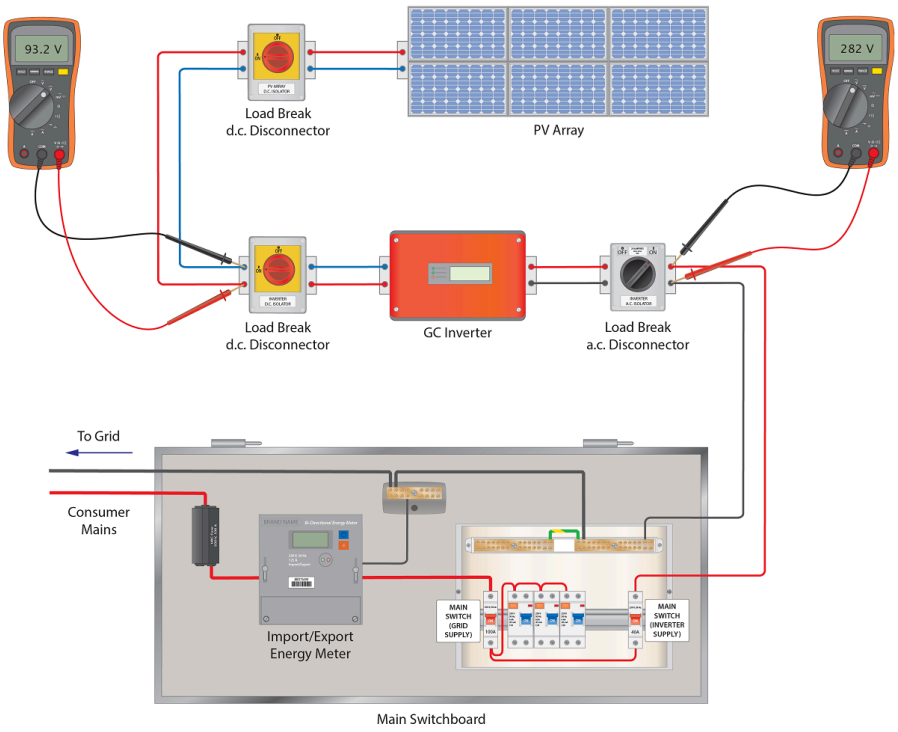
The most likely reason for the test result indicated is that ✖ .

The no-load isolator has been left in the OFF position. Refer to content page 6.3 for further guidance.

Question 2

Not answered

Marked out of 1.00



Examine the diagram above, showing a 1.2 kW PV system, having a nominal voltage of 72 V d.c.
The array power has dropped to zero, and so the installation is undergoing operational testing to determine the cause.
The most likely cause of the fault, given the symptoms and test results indicated is that

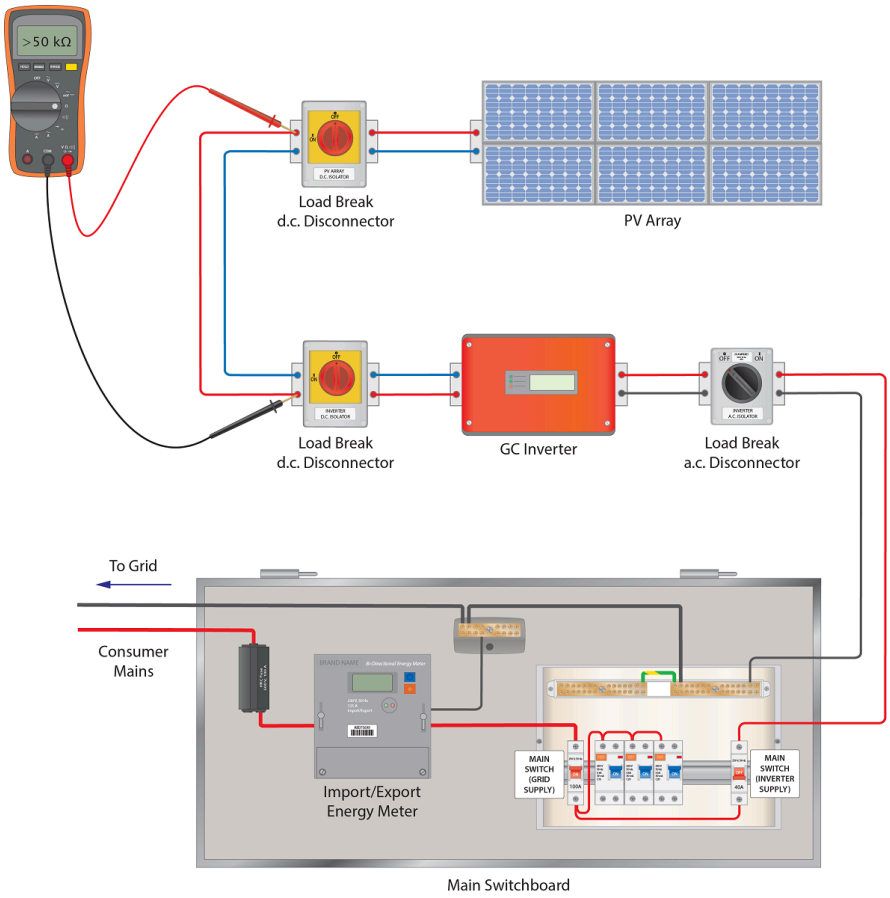
[ ] ✖ .

A grid voltage of 282 V will have exceeded the upper limit of the inverter passive grid protection, causing automatic disconnection of the circuit. The open circuit array voltage is being measured at the line side terminals of the inverter switch disconnector. Refer to content page 6.3 for further guidance.

Question 3

Not answered

Marked out of 1.00



Examine the diagram above, showing the active conductor of the d.c. cabling between the array and the inverter under test during system commissioning.

The test result shown indicates [ ] ✖ .

The high resistance indicates an open-circuit, likely caused by mechanical damage to the conductor. Refer to content page 6.3 for further guidance.

Question 4

Not answered

Marked out of 4.00

Match the PV array faults to the most likely cause from the list provided:

Broken module glass	Choose...
Shading	Choose...
Delamination	Choose...
Open-circuit interconnection wiring	Choose...

Your answer is incorrect.

Refer to content page 6.3

The correct answer is: Broken module glass → Hail, Shading → Vegetation growth, Delamination → Thermal stress, Open-circuit interconnection wiring → Wind loading

Question 5

Not answered

Marked out of 4.00

Match the PV array problems to the most suitable solution from the list provided:

Delamination	✖
Shading	✖
Soiling	✖
Broken module glass	✖

Refer to content page 6.3

Question 6

Not answered

Marked out of 4.00

Match the PV array problems to the most suitable solution from the list provided:

Accumulation of dust	
Open-circuit cells	
Open-circuit interconnection wiring	
Short-circuit cells	

Refer to content page 6.3