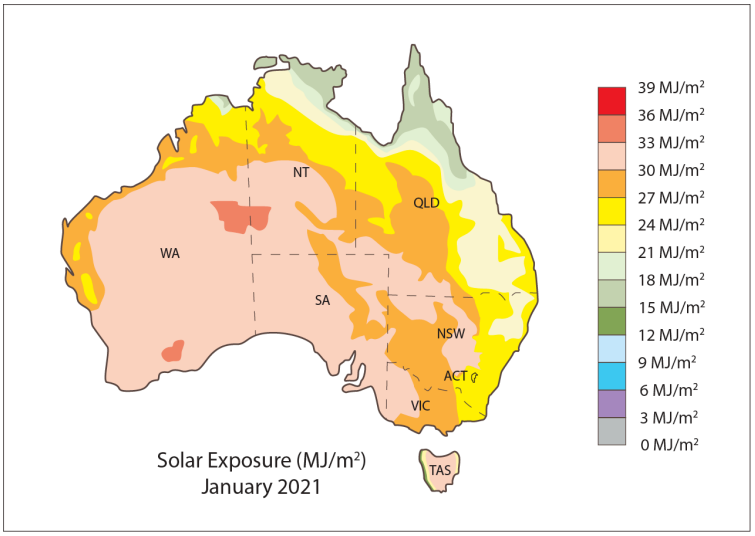
Started on	Thursday, 31 October 2024, 4:38 PM
State	Finished
Completed on	Thursday, 31 October 2024, 4:38 PM
Time taken	14 secs
Grade	**0.00** out of 22.00 (**0**%)

Question 1

Not answered

Marked out of 1.00



What type of solar data is pictured above?

- A solar contour map
- A sun path diagram
- None of these
- An irradiation chart

Your answer is incorrect.

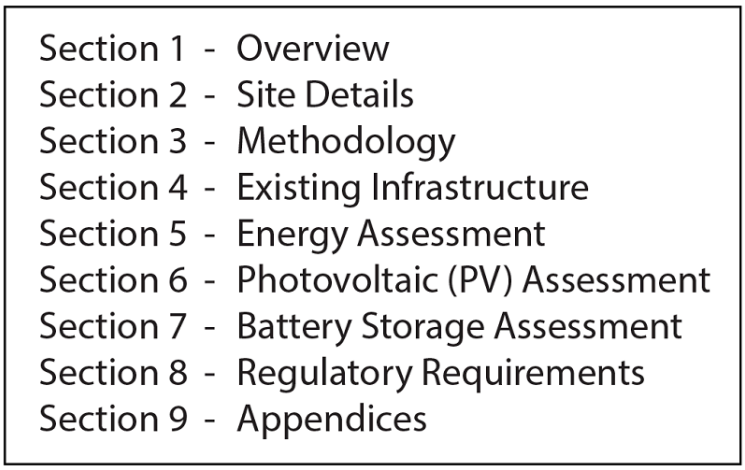
Refer to content page 6.2

The correct answer is:
A solar contour map

Question 2

Not answered

Marked out of 1.00



In a final site survey report having the sections pictured above, which section would describe the energy usage patterns at the site?

- Section 5 – Energy Assessment
- Section 6 – Photovoltaic (PV) Assessment
- Section 7 – Battery Storage Assessment
- Section 4 – Existing Infrastructure
- Section 9 – Appendices
- Section 2 – Site Details
- Section 8 – Regulatory Requirements
- Section 1 – Overview
- Section 3 – Methodology

Your answer is incorrect.

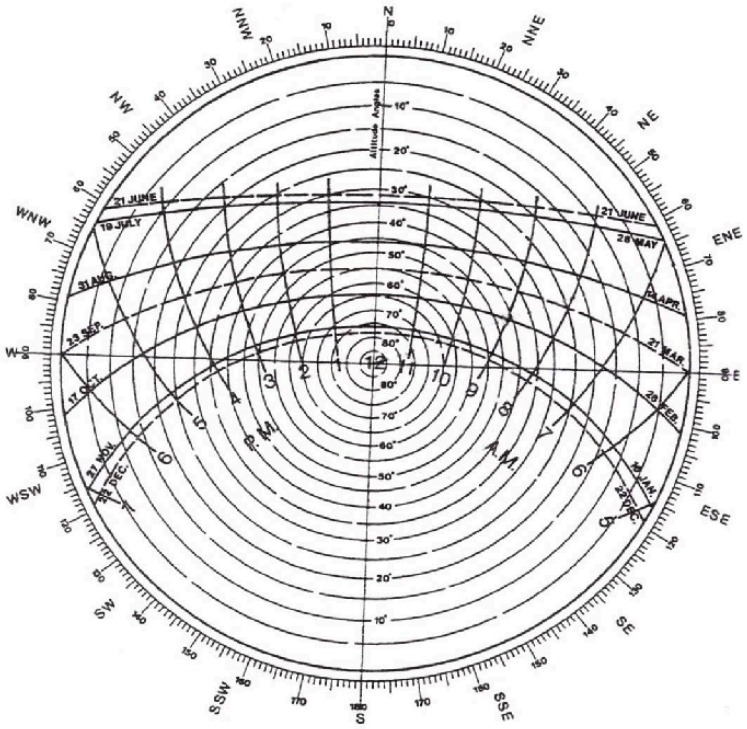
Refer to content page 6.3

The correct answer is: Section 5 – Energy Assessment

Question 3

Not answered

Marked out of 1.00



What type of solar data is pictured above?

- A solar contour map
- None of these
- An irradiation chart
- A sun path diagram

Your answer is incorrect.

Refer to content page 6.2

The correct answer is:
A sun path diagram

Question 4

Not answered

Marked out of 1.00

According to Safe Work Australia, what is the minimum clearance that should be maintained to live low voltage services whilst operating an EWP?

- 0.3 m
- 30 m
- 3 m
- 0 m

Your answer is incorrect.

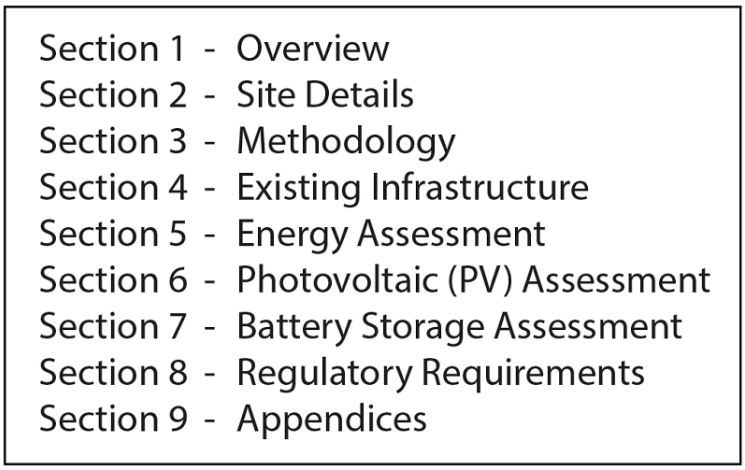
Refer to content page 6.1 and/or Industry Codes of Practice for further guidance.

The correct answer is:
3 m

Question 5

Not answered

Marked out of 1.00



In a final site survey report having the sections pictured above, which section would the scope and objectives of the survey be described?

- Section 7 – Battery Storage Assessment
- Section 6 – Photovoltaic (PV) Assessment
- Section 2 – Site Details
- Section 8 – Regulatory Requirements
- Section 9 – Appendices
- Section 4 – Existing Infrastructure
- Section 3 – Methodology
- Section 1 – Overview
- Section 5 – Energy Assessment

Your answer is incorrect.

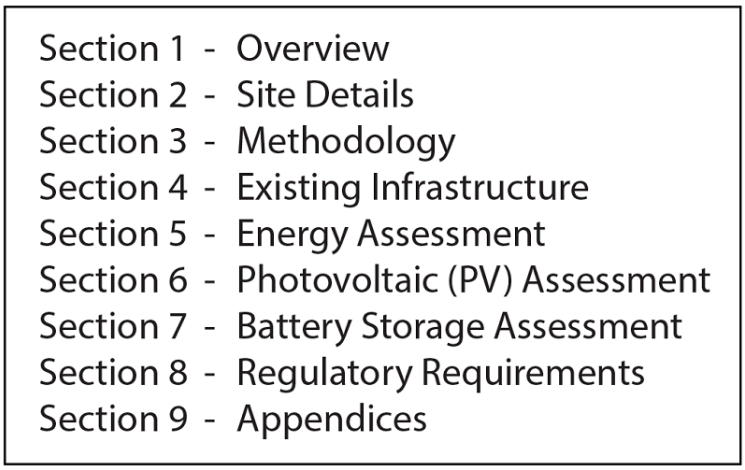
Refer to content page 6.3

The correct answer is:
Section 1 – Overview

Question 6

Not answered

Marked out of 1.00



In a final site survey report having the sections pictured above, which section would the details of required permits and council approvals be listed?

- Section 6 – Photovoltaic (PV) Assessment
- Section 5 – Energy Assessment
- Section 3 – Methodology
- Section 8 – Regulatory Requirements
- Section 1 – Overview
- Section 4 – Existing Infrastructure
- Section 2 – Site Details
- Section 9 – Appendices
- Section 7 – Battery Storage Assessment

Your answer is incorrect.

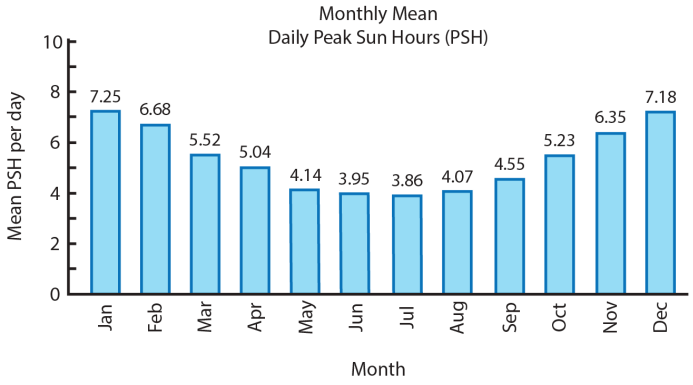
Refer to content page 6.3

The correct answer is:
Section 8 – Regulatory Requirements

Question 7

Not answered

Marked out of 1.00



Interpret the irradiation chart to identify the average yearly irradiation for that location.
Provide your answer in PSH, correctly rounded to three significant figures.

Answer: ✖ PSH

7.25 + 6.68 + 5.52 + 5.04 + 4.14 + 3.95 + 3.86 + 4.07 + 4.55 + 5.23 + 6.35 + 7.18 = 63.82

63.82/12 = 5.318 = 5.32 PSH

Question 8

Not answered

Marked out of 1.00

The daily irradiation of a fixed PV array can vary due to:

- the time of year
- inverter efficiency
- the time of day
- voltage drop

Your answer is incorrect.

The irradiation of a fixed PV array will not be affected by voltage drop or inverter efficiency, but will vary based on the solar window.

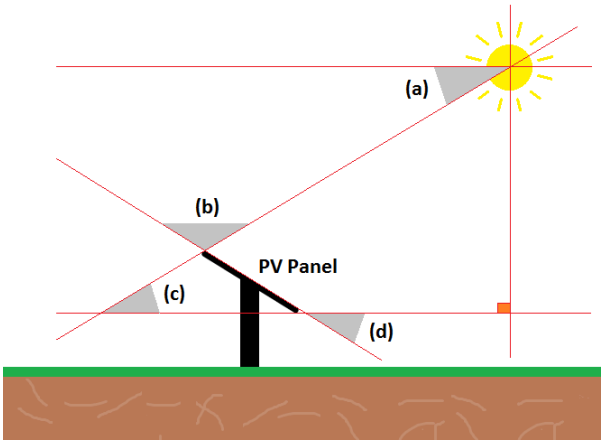
Refer to content page 6.2 for further guidance.

The correct answer is:
the time of year

Question 9

Not answered

Marked out of 1.00



In the diagram above. Which letter indicates the tilt angle of the PV panel?

- (b)
- (d)
- (a)
- (c)

Your answer is incorrect.

The tilt angle is the angle between the horizontal plane and the plane of a photovoltaic module. Refer to content page 6.2 for further guidance.

The correct answer is:
(d)

Question 10

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:

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

Your answer is incorrect.

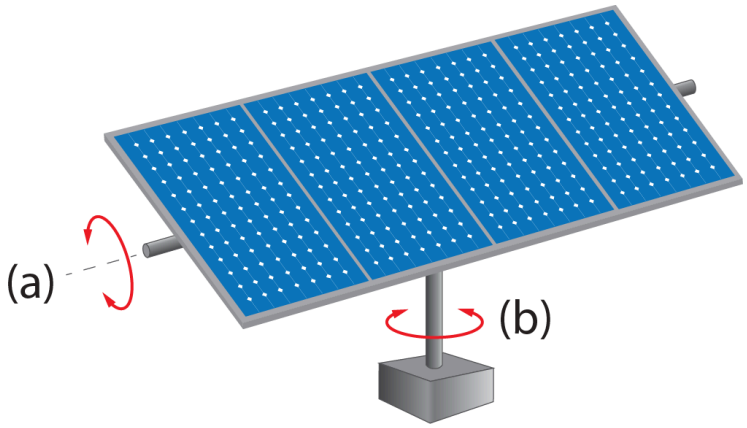
Refer to content page 6.1 for further guidance.

The correct answer is:
the use of a safety harness

Question 11

Not answered

Marked out of 1.00



For the solar tracking system illustrated above, what does (a) indicate?

- Longitude adjustment
- Zenith adjustment
- Orientation adjustment
- Tilt angle adjustment

Your answer is incorrect.

Refer to content page 6.2

The correct answer is:
Tilt angle adjustment

Question 12

Not answered

Marked out of 1.00

Which of the following is a type of passive fall protection?

- Safety gates
- Guardrails
- Safety netting
- All of these

Your answer is incorrect.

Refer to content page 6.1 and/or Industry Codes of Practice for further guidance.

The correct answer is:
All of these

Question 13

Not answered

Marked out of 1.00

Which of the following are economic factors that should be considered as part of a site survey?

- Upfront costs
- Government incentives
- All of these are correct
- Payback period

Your answer is incorrect.

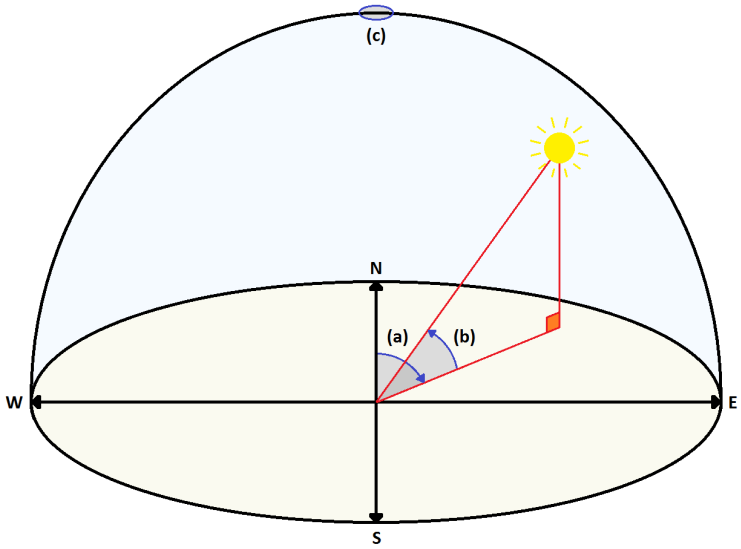
Refer to content page 6.1

The correct answer is:
All of these are correct

Question 14

Not answered

Marked out of 1.00



In relation to the diagram above, what does (b) represent?

- The azimuth angle
- The zenith
- The tilt angle
- The altitude angle

Your answer is incorrect.

The altitude angle is the angle between the horizon and the sun. Refer to content page 6.2 for further guidance.

The correct answer is: The altitude angle

Question 15

Not answered

Marked out of 1.00

To achieve optimal irradiation in Australia, PV panels should be oriented to face true:

- north
- east
- west
- south

Your answer is incorrect.

Refer to content page 6.2

The correct answer is:
north

Question 16

Not answered

Marked out of 1.00

When surveying a roof for a proposed PV array, the available roof space will determine:

- the ongoing shading and soiling of the array
- All of these are correct
- the maximum number of panels for the array
- the ease of access for maintenance purposes

Your answer is incorrect.

Refer to content page 6.1.

The correct answer is: the maximum number of panels for the array

Question 17

Not answered

Marked out of 1.00

Which of the following is the best method to identify potential locations for a PV array at a given site?

- Consult the local council
- Walk-through site inspection
- Review climate data
- Consult the network provider

Your answer is incorrect.

Refer to content page 6.1.

The correct answer is:
Walk-through site inspection

Question 18

Not answered

Marked out of 1.00

What is the purpose of solar tracking systems in PV installations?

- To maximise the irradiation of the array
- To reduce the operating temperature of the array
- To mitigate the effect of shading and cloud cover
- To protect the array from harsh weather conditions

Your answer is incorrect.

Refer to content page 6.2

The correct answer is: To maximise the irradiation of the array

Question 19

Not answered

Marked out of 1.00

What is the advantage of using solar tracking systems in PV installations?

- Increased durability
- Reduced installation costs
- Less maintenance required
- Increased energy production

Your answer is incorrect.

Refer to content page 6.2

The correct answer is:
Increased energy production

Question 20

Not answered

Marked out of 1.00

How can you determine irradiance at a particular site?

- Walk-through site inspection
- Consult the client
- Consult the network provider
- Review relevant solar data

Your answer is incorrect.

Refer to content page 6.1.

The correct answer is:
Review relevant solar data

Question 21

Not answered

Marked out of 1.00

Which of the following factors will cause variations in the irradiance at the surface of a fixed PV array?

- Time of day
- Cloud cover
- Shading
- All of these

Your answer is incorrect.

The irradiance arriving at the surface of a fixed PV array will not be affected by voltage drop or cell efficiency, but will vary due to seasonal changes.

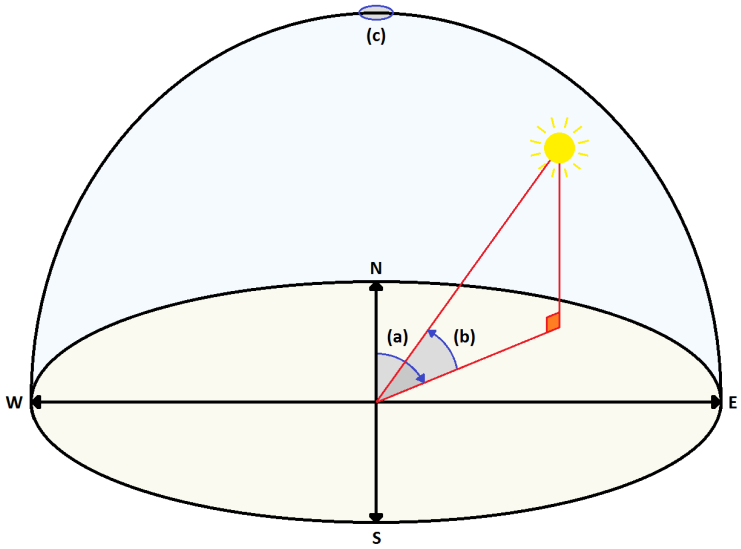
Refer to content page 6.2 for further guidance.

The correct answer is:
All of these

Question 22

Not answered

Marked out of 1.00



In relation to the diagram above, what does (a) represent?

- The zenith
- The altitude angle
- The tilt angle
- The azimuth angle

Your answer is incorrect.

The azimuth angle is the angle between the sun and true north in a clockwise direction. Refer to content page 6.2 for further guidance.

The correct answer is: The azimuth angle

Started on	Thursday, 31 October 2024, 4:37 PM
State	Finished
Completed on	Thursday, 31 October 2024, 4:37 PM
Time taken	14 secs
Grade	**0.00** out of 14.00 (**0**%)

Question 1

Not answered

Marked out of 1.00

Which of the following methods should be used to evaluate the energy usage at a site?

- Conduct a 'walk through' inspection of the site
- Review site plans and architectural drawings
- Review a selection of energy bills
- All of the these are correct

Your answer is incorrect.

Refer to content page 5.2

The correct answer is:
Review a selection of energy bills

Question 2

Not answered

Marked out of 1.00

Which of the following measures will improve the energy efficiency of an existing building?

- Installing air conditioning
- Replacing the main switchboard
- Installing thermal insulation
- Replacing the electrical wiring

Your answer is incorrect.

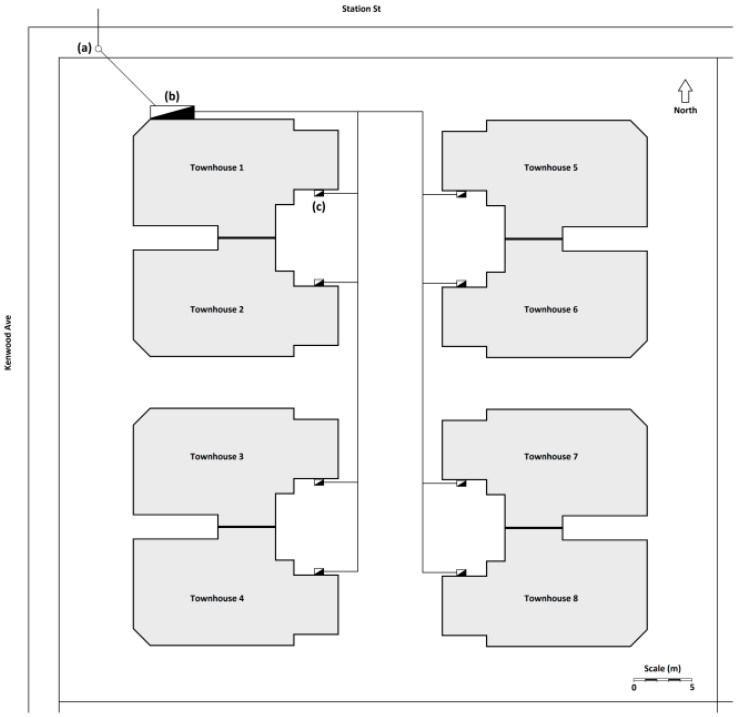
Refer to content page 5.2

The correct answer is:
Installing thermal insulation

Question 3

Not answered

Marked out of 1.00



What type of electrical infrastructure is indicated by the letter (c) on the site plan pictured above?

- A distribution switchboard
- The point of supply
- The main switchboard
- A final subcircuit

Your answer is incorrect.

Refer to content page 5.1

The correct answer is:
A distribution switchboard

Question 4

Not answered

Marked out of 1.00

Which of the following factors will affect the amount of energy consumed in a building?

- The practices and awareness of the inhabitants
- The efficiency of the appliances used in the building
- The construction and design of the building
- All of these

Your answer is incorrect.

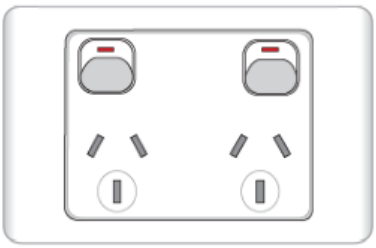
Refer to content page 5.2

The correct answer is:
All of these

Question 5

Not answered

Marked out of 1.00



What is the purpose of the item above in residential installations?

- Provides residents with access to hot water
- Converts electrical energy into mechanical energy
- Converts electrical energy into electromagnetic energy
- Allows residents to use portable appliances

Your answer is incorrect.

The correct answer is:
Allows residents to use portable appliances

Question 6

Not answered

Marked out of 1.00

Which of the following information should be documented when evaluating the existing electrical infrastructure at a site?

- Number of supply phases
- Consumer mains cable size
- Locations of switchboards
- All of the these are correct

Your answer is incorrect.

Refer to content page 5.1

The correct answer is:
All of the these are correct

Question 7

Not answered

Marked out of 1.00

In Australia, what is the standard voltage of a single-phase residential supply?

- 230 V
- 440 V
- 110 V
- 400 V

Your answer is incorrect.

Refer to content page 5.1

The correct answer is:
230 V

Question 8

Not answered

Marked out of 1.00

In Australia, what is the standard voltage of a three-phase residential supply?

- 400 V
- 440 V
- 110 V
- 230 V

Your answer is incorrect.

Refer to content page 5.1

The correct answer is:
400 V

Question 9

Not answered

Marked out of 1.00

Which of the following techniques could be used to reduce the total energy consumed by a lighting circuit?

- Replacing the incandescent lamps with LEDs
- Installing shades and screens to prevent direct sunlight coming through windows
- All of these
- Installing thermal insulation in walls and ceilings

Your answer is incorrect.

Refer to content page 5.2

The correct answer is:
Replacing the incandescent lamps with LEDs

Question 10

Not answered

Marked out of 1.00

Along with electricity, another common energy service supplied to domestic residences in Australia is:

- hydrothermal
- nuclear
- diesel
- gas

Your answer is incorrect.

Refer to content page 5.1

The correct answer is:
gas

Question 11

Not answered

Marked out of 1.00

Motion sensors and timers can be retrofitted into existing buildings to improve energy efficiency by reducing:

- the quantity of waste products being produced
- unnecessary usage of equipment
- the amount of energy needed to operate equipment
- reliance on fossil-fuels

Your answer is incorrect.

Refer to content page 5.2

The correct answer is:
unnecessary usage of equipment

Question 12

Not answered

Marked out of 1.00

Which of the following methods should be used to evaluate the electrical infrastructure at a site?

- Conduct a 'walk through' inspection of the site
- Review site plans and architectural drawings
- All of the these are correct
- Consult the client

Your answer is incorrect.

Refer to content page 5.1

The correct answer is: All of the these are correct

Question 13

Not answered

Marked out of 1.00

Which of the following methods would be most effective at reducing the reliance of an electrical installation on non-sustainable energy sources?

- Installing thermal insulation
- Installing motion sensors and timers to control equipment
- Installing a PV power system
- Installing ultra-low flow shower heads

Your answer is incorrect.

Refer to content page 5.2

The correct answer is:
Installing a PV power system

Question 14

Not answered

Marked out of 1.00

Which of the following techniques can be used to reduce the need to use artificial lighting?

- Installing a timer to control the lighting circuit
- Replacing incandescent lamps with LEDs
- Installing thermal insulation in ceilings
- Installing additional windows and skylights

Your answer is incorrect.

Refer to content page 5.2

The correct answer is:
Installing additional windows and skylights

Started on	Thursday, 31 October 2024, 4:36 PM
State	Finished
Completed on	Thursday, 31 October 2024, 4:37 PM
Time taken	13 secs
Grade	**0.00** out of 18.00 (**0**%)

Question 1

Not answered

Marked out of 1.00

The main objective of workplace health and safety legislation and regulations is to provide a framework for:

- prosecuting those persons responsible for workplace accidents
- safeguarding the health and safety of persons at home and in the workplace
- safeguarding the health and safety of workers and workplaces
- eliminating all hazards and risks from a workplace

Your answer is incorrect.

Refer to content page 4.1 and State/Territory health and safety regulations for further guidance.

The correct answer is: safeguarding the health and safety of workers and workplaces

Question 2

Not answered

Marked out of 1.00

Who is permitted to remove a personal danger tag from an electrical isolator?

- The site surveyor
- The person who applied the tag
- Any of these people
- Any licensed electrician

Your answer is incorrect.

Refer to content page 4.4 and/or Industry Codes of Practice for further guidance.

The correct answer is: The person who applied the tag

Question 3

Not answered

Marked out of 1.00

Who is responsible for providing a worker with personal protective equipment (PPE)?

- The health and safety committee
- The employer
- The workplace health and safety authority
- The worker

Your answer is incorrect.

Refer to content page 4.1 and State/Territory health and safety regulations for further guidance.

The correct answer is:
The employer

Question 4

Not answered

Marked out of 1.00

The main factors affecting the severity of an electric shock are the magnitude of current, the path the current takes through the body, and the:

- ambient temperature
- resistance of the earth
- relative humidity
- duration of exposure

Your answer is incorrect.

Refer to content page 4.4 and/or Industry Codes of Practice for further guidance.

The correct answer is:
duration of exposure

Question 5

Not answered

Marked out of 1.00

When carrying out a risk assessment, the first step is to:

- assess the risks
- determine suitable risk control measures
- eliminate the hazards
- identify the hazards

Your answer is incorrect.

Refer to content page 4.2 and State/Territory health and safety regulations for further guidance.

The correct answer is:
identify the hazards

Question 6

Not answered

Marked out of 1.00

Which of the following hazards would likely be present on the rooftop of a residential grid-connect worksite?

- Manual handling
- UV radiation
- All of these
- Working at heights

Your answer is incorrect.

Refer to content page 4.3 and State/Territory health and safety regulations for further guidance.

The correct answer is:
All of these

Question 7

Not answered

Marked out of 1.00

Which of the following Australian Standards specifies the requirements for working safely on and near low voltage electrical installations and equipment?

- AS/NZS 5033
- AS/NZS 2076
- AS/NZS 3001
- AS/NZS 4836

Your answer is incorrect.

Refer to content page 4.1

The correct answer is:
AS/NZS 4836

Question 8

Not answered

Marked out of 1.00

Under workplace health and safety legislation and regulations, workers are:

- required to follow every instruction given by the employer
- solely responsible for their own safety in the workplace
- required to take reasonable care of their own safety in the workplace
- not responsible for their own safety in the workplace

Your answer is incorrect.

Refer to the WHS Act 2011 Section 28 (in applicable jurisdictions).

Refer to content page 4.2 and State/Territory health and safety regulations for further guidance.

The correct answer is: required to take reasonable care of their own safety in the workplace

Question 9

Not answered

Marked out of 1.00

Which of the following Safe Work Australia Model Codes of Practice would be highly relevant to a solar installer?

- All of these are correct
- Managing electrical risks in the workplace
- How to manage and control asbestos in the workplace
- Managing the risk of falls at workplaces

Your answer is incorrect.

Refer to content page 4.1 and Safe Work Australia website for further guidance.

The correct answer is:
All of these are correct

Question 10

Not answered

Marked out of 1.00

One of the underlying principles of workplace health and safety is to:

- prevent workers from working unsafely
- all of these
- reduce workplace accidents and injuries
- remove all hazards from workplaces

Your answer is incorrect.

Refer to content page 4.1 and State/Territory health and safety regulations for further guidance.

The correct answer is:
reduce workplace accidents and injuries

Question 11

Not answered

Marked out of 1.00

Which of the following types of workplace health and safety documents would be most suitable for determining a practical, industry-approved method of dealing with a specific hazard?

- A regulation
- An Act
- A code of practice
- An Australian Standard

Your answer is incorrect.

Refer to content page 4.1 and State/Territory health and safety regulations for further guidance.

The correct answer is:
A code of practice

Question 12

Not answered

Marked out of 1.00

According to the hierarchy of controls, which of the following is the most preferred method of dealing with a workplace hazard?

- Personal protective equipment (PPE)
- Elimination
- Substitution
- Engineering controls

Your answer is incorrect.

Refer to content page 4.2 and State/Territory health and safety regulations for further guidance.

The correct answer is:
Elimination

Question 13

Not answered

Marked out of 1.00

Which of the following factors are likely to increase the chance of an electrical accident?

- [ ] Tiredness
- [ ] Stress
- [ ] All of these
- [ ] Distraction

Your answer is incorrect.

Refer to content page 4.4 and/or Industry Codes of Practice for further guidance.

The correct answer is:
All of these

Question 14

Not answered

Marked out of 1.00

Which of the following hazards would typically be present whilst carrying out electrical maintenance on a residential rooftop PV array?

- ( ) Working at heights
- ( ) All of these
- ( ) Live electrical parts
- ( ) UV radiation

Your answer is incorrect.

Refer to content page 4.3 and State/Territory health and safety regulations for further guidance.

The correct answer is:
All of these

Question 15

Not answered

Marked out of 1.00

A risk management plan should:

- be specific to the work environment
- be generic and transferrable to any worksite
- eliminate all risks from a workplace
- not be changed once it is implemented

Your answer is incorrect.

Refer to content page 4.2 and State/Territory health and safety regulations for further guidance.

The correct answer is:
be specific to the work environment

Question 16

Not answered

Marked out of 1.00

Instructing workers in how to safely operate a power tool is an example of:

- using engineering controls to reduce risk
- isolating workers from the risk
- eliminating the risk
- using administrative controls to reduce risk

Your answer is incorrect.

Refer to content page 4.2 and State/Territory health and safety regulations for further guidance.

The correct answer is:
using administrative controls to reduce risk

Question 17

Not answered

Marked out of 1.00

Which of the following characteristics are likely to increase the chance of an electrical accident?

- Concentration
- Confidence
- Attention to detail
- Impatience

Your answer is incorrect.

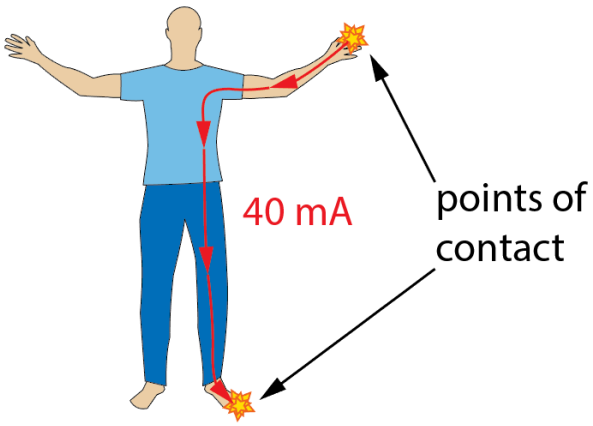
Refer to content page 4.4 and/or Industry Codes of Practice for further guidance.

The correct answer is:
Impatience

Question 18

Not answered

Marked out of 1.00



If the duration of the electric shock, illustrated above, was 3 seconds, what would be the likely physiological effects on the victim?

- Severe burns, ventricular fibrillation and cardiac arrest
- No effects, the shock would be most likely below the level of perception
- Muscular contraction, shortness of breath, and possibly some mild burns
- Mild startling, but no serious effects

Your answer is incorrect.

Refer to content page 5.1 and/or Industry Codes of Practice for further guidance.

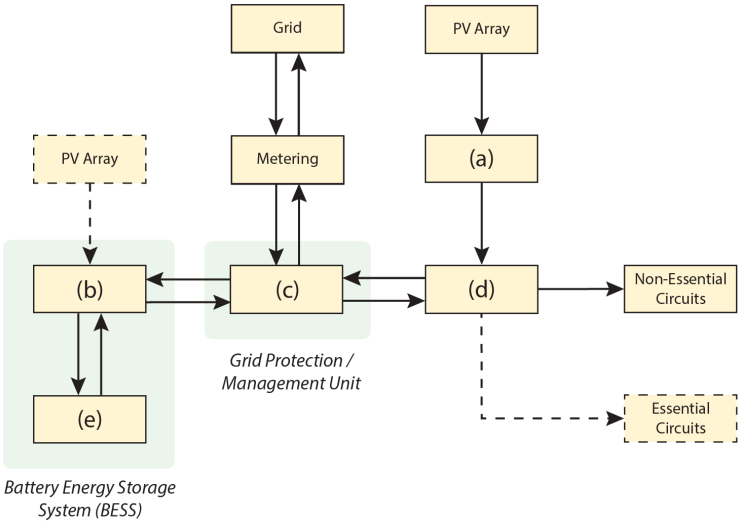
The correct answer is:
Severe burns, ventricular fibrillation and cardiac arrest

Started on	Tuesday, 25 March 2025, 6:19 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 6:20 PM
Time taken	11 secs
Grade	**0.00** out of 26.00 (**0**%)

Question 1

Not answered

Marked out of 1.00



For the PV battery storage system pictured above, what is the missing component (d)?

- Main switchboard
- String inverter
- Multimode inverter
- Battery bank

Your answer is incorrect.

Refer to content page 3.1

The correct answer is:
Main switchboard

Question 2

Not answered

Marked out of 1.00

Battery system batteries must be installed in accordance with:

- AS/NZS 3000
- AS/NZS 5139
- All of these
- The manufacturer's instructions

Your answer is incorrect.

Refer to content page 4.2

The correct answer is:
All of these

Question 3

Not answered

Marked out of 1.00

When compared to lithium-ion batteries, flow batteries:

- have a shorter service life
- require less maintenance
- have a lower energy density
- are prone to stratification

Your answer is incorrect.

Refer to content page 3.2

The correct answer is: have a lower energy density

Question 4

Not answered

Marked out of 1.00

Which charging mode applies a constant voltage across the batteries until the SoC reaches the maximum charge voltage?

- CV charging
- CC charging
- Smart/adaptive charging
- Trickle charging

Your answer is incorrect.

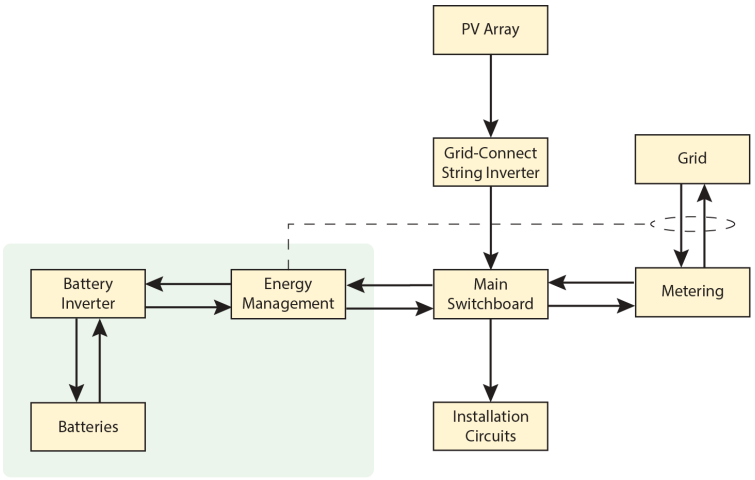
Refer to content page 3.2

The correct answer is:
CV charging

Question 5

Not answered

Marked out of 1.00



Battery Energy Storage System (BESS)

The PV battery storage system pictured above is:

- a.c. coupled, with standalone capability
- a.c. coupled, with no standalone capability
- d.c. coupled, with standalone capability
- d.c. coupled, with no standalone capability

Your answer is incorrect.

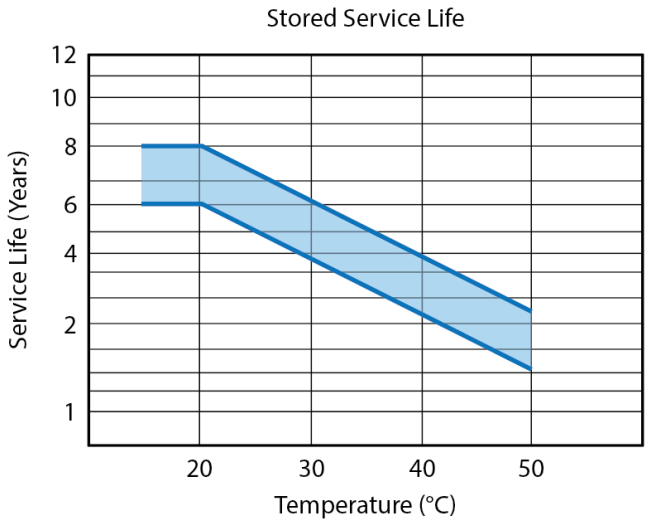
Refer to content page 3.1

The correct answer is:
a.c. coupled, with no standalone capability

Question 6

Not answered

Marked out of 1.00



Based on the manufacturer's data above, when stored at a temperature of 30°C, the battery will have an expected life of approximately:

- 8 to 10 years
- 4 to 6 years
- 6 to 8 years
- 2 to 4 years

Your answer is incorrect.

Refer to content page 3.2

The correct answer is:
4 to 6 years

Question 7

Not answered

Marked out of 1.00

What is the purpose of the switch disconnectors in a grid-connected PV system with battery storage?

- Indicates and logs system parameters for analysis
- Controls the charging parameters applied to the batteries
- Converts a d.c. input to an a.c. output
- Allows safe operation and isolation of the system

Your answer is incorrect.

Refer to content page 3.1

The correct answer is:
Allows safe operation and isolation of the system

Question 8

Not answered

Marked out of 1.00

What is the purpose of metering/monitoring in a grid-connected PV system with battery storage?

- All of these are correct
- Stores energy for use when needed
- Logs system parameters for analysis
- Prevents electrical faults from arising

Your answer is incorrect.

Refer to content page 3.1

The correct answer is:
Logs system parameters for analysis

Question 9

Not answered

Marked out of 1.00

The DoD rating of a battery indicates:

- how far it can be safely discharged without negatively affecting battery life
- the amount of energy left in the battery at a given time
- all of these are correct
- how many discharge/recharge cycles it has in its normal service life

Your answer is incorrect.

Refer to content page 3.2

The correct answer is:
how far it can be safely discharged without negatively affecting battery life

Question 10

Not answered

Marked out of 1.00

When compared to lead-acid batteries, lithium-ion batteries:

- require more maintenance
- have a higher energy density
- are more prone to sulphation
- have a shorter service life

Your answer is incorrect.

Refer to content page 3.2

The correct answer is:
have a higher energy density

Question 11

Not answered

Marked out of 1.00

According to AS/NZS 5139:2019, what is the minimum IP rating for a pre-assembled battery system to be installed outdoors?

- IP56
- IP66
- IP23
- IP44

Your answer is incorrect.

Refer to content page 3.3 and AS/NZS 5139:2019 Clause 5.2.3.2

The correct answer is:
IP23

Question 12

Not answered

Marked out of 1.00

What is the purpose of the batteries in a grid-connected PV system with battery storage?

- Converts kinetic energy into chemical energy
- Converts a d.c. input to an a.c. output
- Converts an a.c. input to a d.c. output
- Stores energy for use when needed

Your answer is incorrect.

Refer to content page 3.1

The correct answer is: Stores energy for use when needed

Question 13

Not answered

Marked out of 1.00

The multiple mode inverter of a PV battery storage system must be installed in accordance with:

- The manufacturer's instructions
- AS/NZS 4777.1
- All of these
- AS/NZS 3000

Your answer is incorrect.

Refer to content page 3.3

The correct answer is:
All of these

Question 14

Not answered

Marked out of 1.00

Why do network providers commonly have requirements relating to grid-connected battery systems?

- To ensure the safety and stability of the grid
- To flatten the load profile of the installation
- To ensure the price of energy keeps rising
- To discourage the adoption of battery storage

Your answer is incorrect.

Refer to content page 3.1

The correct answer is: To ensure the safety and stability of the grid

Question 15

Not answered

Marked out of 1.00

Where a battery storage system consists of a multiple mode grid-connected inverter that is capable of providing an independent supply:

- any final subcircuits supplied by the inverter must **not** be RCD protected
- the grid protection device must operate in both the active and neutral conductors
- the inverter grid-interactive port submain must be RCD protected
- the independent supply port of the inverter must be provided with a main isolator

Your answer is incorrect.

Refer to AS/NZS 4777.1:2024 Clause 5.4.3

The correct answer is:
the independent supply port of the inverter must be provided with a main isolator

Question 16

Not answered

Marked out of 1.00

What is the minimum DVC for a multimode inverter to be used with a 60 V d.c. PV array and a 120 V d.c. battery system?

- DVC-A
- DVC-B
- DVC-C
- DVC-D

Your answer is incorrect.

Refer to content page 3.3 and AS/NZS 5139:2019 Table 3.2

The correct answer is:
DVC-B

Question 17

Not answered

Marked out of 1.00

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

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

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 18

Not answered

Marked out of 1.00

Modern lithium-ion batteries designed for grid-connect storage applications have a DoD of around:

- 40%
- 80 to 90%
- 60%
- 100 to 120%

Your answer is incorrect.

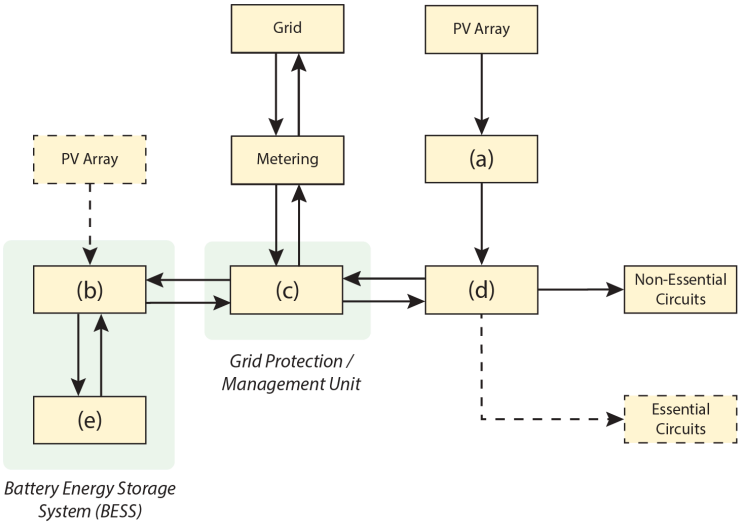
Refer to content page 3.2

The correct answer is:
80 to 90%

Question 19

Not answered

Marked out of 1.00



For the PV battery storage system pictured above, what is the missing component (b)?

- Charge controller
- String inverter
- Multimode inverter
- Battery bank

Your answer is incorrect.

Refer to content page 3.1

The correct answer is:
Multimode inverter

Question 20

Not answered

Marked out of 1.00

Which of the following factors can reduce the service life of a battery?

- High discharge rate
- Cool and dry conditions
- Recharging a battery before it has reached its DoD
- Regular maintenance

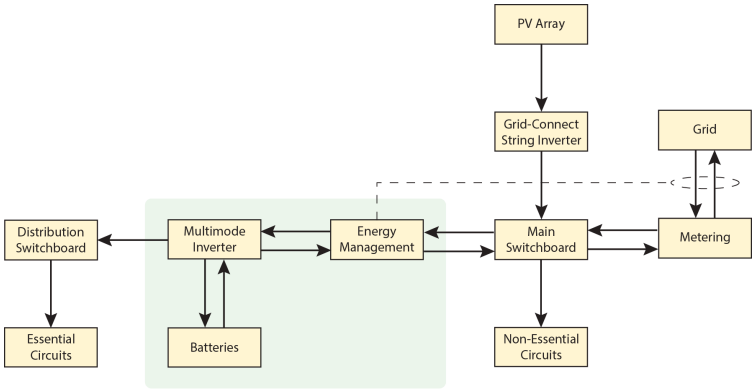
Your answer is incorrect.

The correct answer is:
High discharge rate

Question 21

Not answered

Marked out of 1.00



Battery Energy Storage System (BESS)

The PV battery storage system pictured above is:

- a.c. coupled, with standalone capability
- d.c. coupled, with standalone capability
- d.c. coupled, with no standalone capability
- a.c. coupled, with no standalone capability

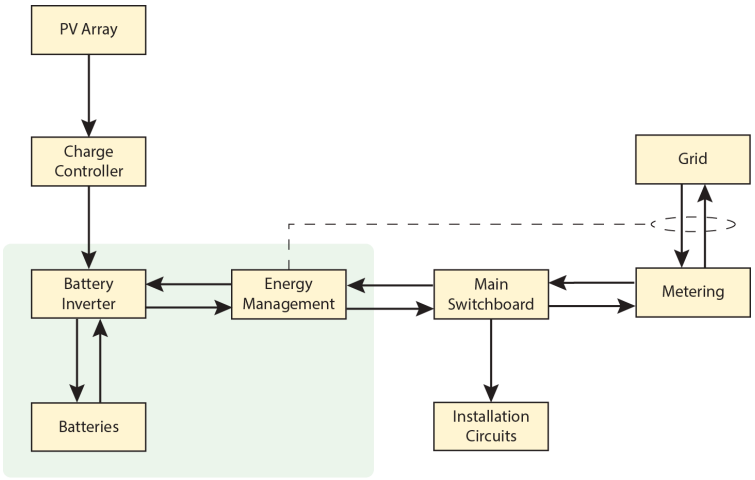
Your answer is incorrect.

The correct answer is:
a.c. coupled, with standalone capability

Question 22

Not answered

Marked out of 1.00



Battery Energy Storage System (BESS)

The PV battery storage system pictured above is:

- d.c. coupled, with no standalone capability
- a.c. coupled, with no standalone capability
- d.c. coupled, with standalone capability
- a.c. coupled, with standalone capability

Your answer is incorrect.

Refer to content page 3.1

The correct answer is: d.c. coupled, with no standalone capability

Question 23

Not answered

Marked out of 1.00

In relation to grid-connected battery systems, network providers commonly have requirements relating to:

- connected load
- all of these
- cable size
- inverter output

Your answer is incorrect.

Refer to content page 3.1

The correct answer is:
inverter output

Question 24

Not answered

Marked out of 1.00

Which of the following factors can reduce the service life of a battery?

- All of these
- Exceeding DoD
- Dust and contaminants
- High humidity and moisture

Your answer is incorrect.

Refer to content page 3.2

The correct answer is:
All of these

Question 25

Not answered

Marked out of 1.00

Which of the following types of batteries are used in grid-connected PV battery storage systems?

- All of these
- Zinc-air
- Lithium-polymer (LiPo)
- Nickel-metal hydride (NiMH)

Your answer is incorrect.

Refer to content page 3.2

The correct answer is:
Lithium-polymer (LiPo)

Question 26

Not answered

Marked out of 1.00

What is the term for the average voltage that will be available at the terminals of a battery?

- Ampere-hour capacity
- Watt-hour capacity
- State of charge
- Nominal voltage

Your answer is incorrect.

Refer to content page 3.2

The correct answer is:
Nominal voltage

Started on	Tuesday, 25 March 2025, 6:18 PM
State	Finished
Completed on	Tuesday, 25 March 2025, 6:18 PM
Time taken	8 secs
Grade	**0.00** out of 20.00 (**0**%)

Question 1

Not answered

Marked out of 1.00

Module Specifications			
P_{MPP}	175 W		
V_{MPP}	35.4 V	V_{oc}	44.5 V
I_{MPP}	4.9 A	I_{sc}	5.5 A

A customer has specified the use of the modules detailed above to produce a 4.9 kW PV array at their domestic residence, with a maximum d.c. voltage of less than 600 V.

Which of the following arrangements complies with customer and regulatory requirements?

- 2 strings, each consisting of 13 modules
- 2 strings, each consisting of 14 modules
- 4 strings, each consisting of 7 modules
- 4 strings, each consisting of 5 modules

Your answer is incorrect.

4900 / 175 = 28 modules required for the array.

Only the arrangement of 4 x 7 module strings provides the required array power, and results in a maximum array voltage of less than 600 V.

Refer to content page 2.2 for further guidance.

The correct answer is:
4 strings, each consisting of 7 modules

Question 2

Not answered

Marked out of 1.00

A low voltage PV array consisting of two parallel strings:

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

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 3

Not answered

Marked out of 1.00

Module Specifications			
V_{MPP}	35.1 V	V_{oc}	44.2 V
I_{MPP}	4.6 A	I_{sc}	4.8 A

A customer has specified the use of the modules detailed above to produce a 1.9 kW PV array with a nominal operating voltage of approximately 140 V.

What is the minimum number of modules required to create the array?

Answer: ✖ Modules

140 / 35.1 = 3.99

Therefore four modules are required in each series string.

1900 / 140 = 13.6 A

13.6 / 4.6 = 2.96

Therefore three strings are required to produce the required array power at an array voltage of 140 V.

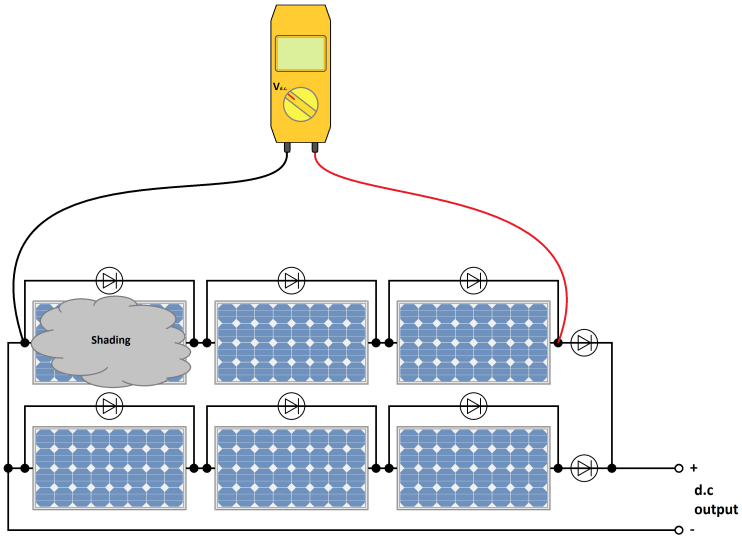
4 x 3 = 12

Therefore twelve modules are required in total. Refer to content page 2.2 for further guidance.

Question 4

Not answered

Marked out of 1.00



The PV array pictured above has a nominal array voltage of 48 V d.c.

Due to the shading indicated, the d.c. voltmeter will read:

- 16 V d.c.
- 48 V d.c.
- 24 V d.c.
- 32 V d.c.

Your answer is incorrect.

(48/3) x 2 = 32 V

Refer to content page 2.2 for further guidance.

The correct answer is:
32 V d.c.

Question 5

Not answered

Marked out of 1.00

Which of the following environmental factors should be considered when planning out a grid-connect PV installation?

- All of these are correct
- Carbon footprint associated with the work
- Potential for soil erosion and land degradation
- Potential for negative effects on ecosystems

Your answer is incorrect.

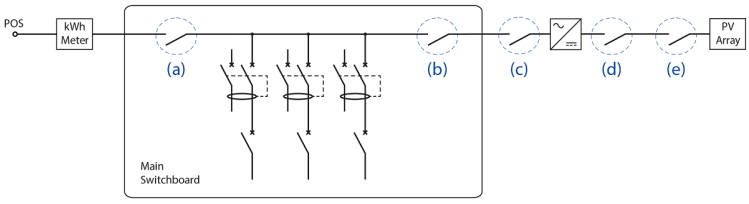
Refer to content page 2.2

The correct answer is:
All of these are correct

Question 6

Not answered

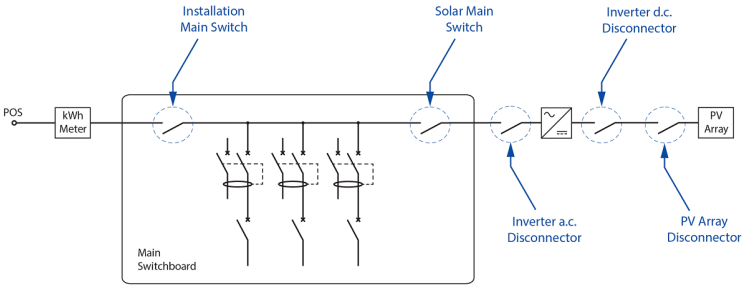
Marked out of 1.00



In the PV system diagram above, (b) indicates:

- the grid supply main switch
- the inverter d.c. disconnector
- the solar supply main switch
- the PV array disconnector

Your answer is incorrect.



The correct answer is:
the solar supply main switch

Question 7

Not answered

Marked out of 1.00

Which of the following is an example of a 'regulatory factor' that could influence the design of a domestic PV system?

- Local council rules regarding the placement of PV arrays on residential homes
- All of these
- The square metreage of spare roof space
- The environmental awareness of the home owner

Your answer is incorrect.

Refer to content page 2.2

The correct answer is: Local council rules regarding the placement of PV arrays on residential homes

Question 8

Not answered

Marked out of 1.00

Which of the following factors will directly influence the size of a PV array for a given installation?

- All of these
- Initial cost
- Desired energy yield
- Available roof space

Your answer is incorrect.

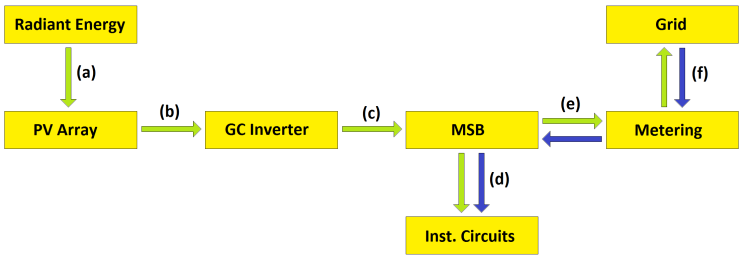
Refer to content page 2.2

The correct answer is:
All of these

Question 9

Not answered

Marked out of 1.00



In the grid-connected PV system pictured above, direct current (d.c.) is flowing:

- at points (c), (d), (e) and (f)
- at point (b) only
- at points (a) and (b) only
- at point (a) only

Your answer is incorrect.

Direct current will flow in the system between the PV array and the inverter.

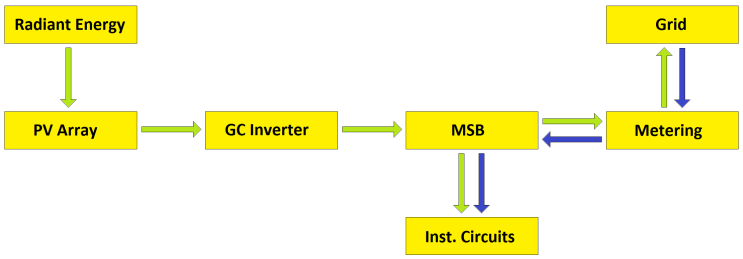
Refer to content page 2.1 for more information.

The correct answer is:
at point (b) only

Question 10

Not answered

Marked out of 1.00



In the grid-connected PV system pictured above, the green arrows indicate the flow of:

- electricity supplied from the grid
- solar radiation
- renewable energy
- direct current

Your answer is incorrect.

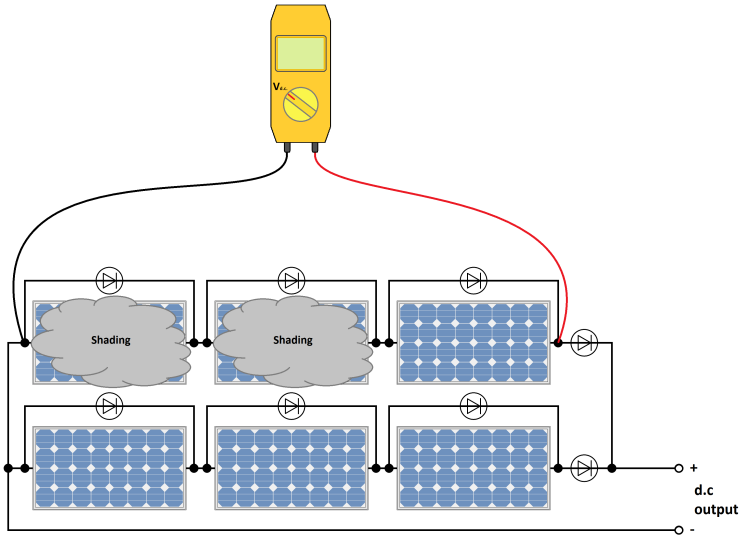
Refer to content page 2.1.

The correct answer is:
renewable energy

Question 11

Not answered

Marked out of 1.00



The PV array pictured above has a nominal array voltage of 48 V d.c.

Due to the shading indicated, the d.c. voltmeter will read:

- 48 V d.c.
- 16 V d.c.
- 24 V d.c.
- 32 V d.c.

Your answer is incorrect.

(48/3) x 1 = 16 V

Refer to content page 2.2 for further guidance.

The correct answer is:
16 V d.c.

Question 12

Not answered

Marked out of 1.00

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

- When an overcurrent occurs
- When the grid supply is disrupted
- When the PV array operates outside of preset voltage limits
- All of these

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 13

Not answered

Marked out of 1.00

Module Specifications			
V_{MPP}	34.3 V	V_{oc}	43.7 V
I_{MPP}	4.8 A	I_{sc}	5.4 A

A customer has specified the use of the modules detailed above to produce a 3.3 kW PV array with a nominal operating voltage of approximately 170 V.

What is the minimum number of modules required to create the array?

Answer: ✖ Modules

170 / 34.3 = 4.96

Therefore five modules are required in each series string.

3300 / 170 = 19.4 A

19.4 / 4.8 = 4

Therefore four strings are required to produce the required power at an array voltage of 170 V.

5 x 4 = 20

Therefore twenty modules are required in total. Refer to content page 2.2 for further guidance.

Question 14

Not answered

Marked out of 1.00

Prior to providing advice to the customer regarding PV options at a particular site, you should check with the local council regarding:

- any safety practices that should be followed
- the length of the payback period
- the approximate price that should be charged
- any local rules and required permits

Your answer is incorrect.

Refer to content page 2.2

The correct answer is: any local rules and required permits

Question 15

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:

- AS/NZS 4777.1
- AS/NZS 5033
- All of these
- 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 16

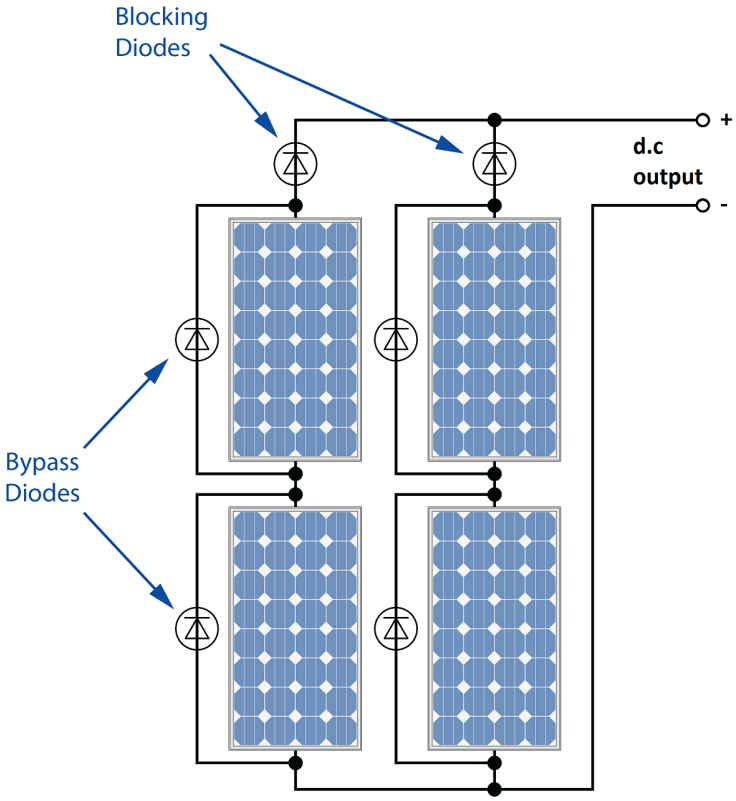
Not answered

Marked out of 1.00

How are bypass diodes connected in a PV array?

- In parallel with series connected modules
- In series with parallel connected strings
- In parallel with parallel connected strings
- In series with series connected modules

Your answer is incorrect.



Refer to content page 2.2 for further guidance.

The correct answer is:
In parallel with series connected modules

Question 17

Not answered

Marked out of 1.00

The MPP tracking of a GC inverter maintains a PV array at maximum power for the given operating conditions by:

- adjusting the load resistance
- adjusting the output voltage
- adjusting the input voltage
- adjusting the output frequency

Your answer is incorrect.

MPP tracking adjusts the load resistance placed on the PV system, to maintain maximum efficiency for a given irradiation and operating temperature.

Refer to content page 2.1 for more information.

The correct answer is:
adjusting the load resistance

Question 18

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?

- 750 V d.c.
- 1000 V d.c.
- 600 V d.c.
- 1,500 V d.c.

Your answer is incorrect.

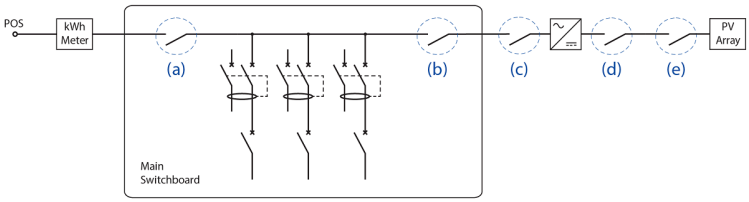
Refer to AS/NZS 5033:2021 Clause 3.1

The correct answer is:
1000 V d.c.

Question 19

Not answered

Marked out of 1.00



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

- Must automatically disconnect in the event of overcurrent
- Must provide both active and passive grid protection
- Must be able to be secured in the open position
- Must be an RCD with a rated residual current not greater than 30 mA

Your answer is incorrect.

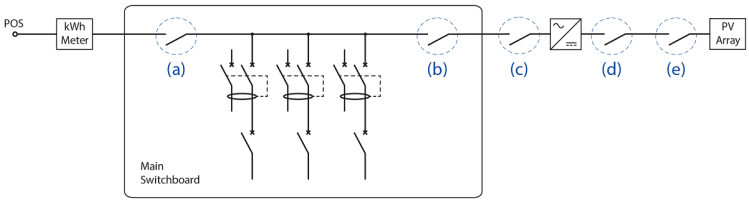
Refer to AS/NZS 4777.1 Clauses 3.4.3.1(b)

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

Question 20

Not answered

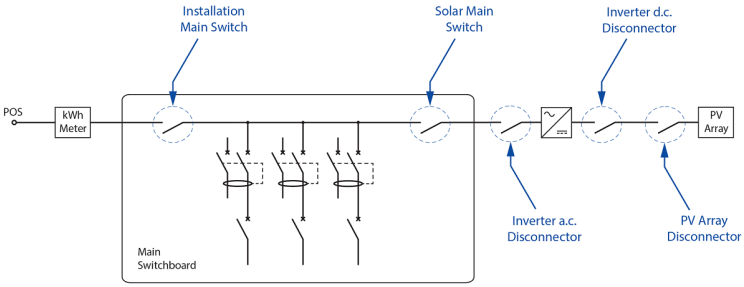
Marked out of 1.00



In the PV system diagram above, (a) indicates:

- the solar supply main switch
- the grid supply main switch
- the inverter a.c. disconnector
- the PV array disconnector

Your answer is incorrect.



The correct answer is:
the grid supply main switch

Started on	Thursday, 31 October 2024, 4:24 PM
State	Finished
Completed on	Thursday, 31 October 2024, 4:24 PM
Time taken	16 secs
Grade	**0.00** out of 16.00 (**0**%)

Question 1

Not answered

Marked out of 1.00

Which of the following is an advantage of adding battery storage to an existing grid-connected PV installation?

- Increases the amount of PV energy generated by the installation
- All of these answers are correct
- Increases the amount of PV energy that is exported to the grid
- Allows more of the generated PV energy to be used in the installation

Your answer is incorrect.

Refer to content page 1.2

The correct answer is:
Allows more of the generated PV energy to be used in the installation

Question 2

Not answered

Marked out of 1.00

When a client is trying to tell you something you should:

- nod and smile while thinking about something more interesting
- tell them you're busy and ask them to stop bothering you
- interrupt them and become impatient if you don't understand
- listen carefully, ask questions and confirm your understanding

Your answer is incorrect.

Refer to content page 1.1

The correct answer is:
listen carefully, ask questions and confirm your understanding

Question 3

Not answered

Marked out of 1.00

The final step in the general site survey process is to:

- determine the condition of site structures
- produce the site report and discuss with the client
- check the grid supply configuration – single or multiphase
- identify areas where energy usage could be reduced

Your answer is incorrect.

Refer to content page 1.1

The correct answer is:
produce the site report and discuss with the client

Question 4

Not answered

Marked out of 1.00

A grid-connected battery system:

- stores electrical energy and converts it to radiant energy when needed
- stores solar energy and converts it to chemical energy when needed
- stores chemical energy and converts it to electrical energy when needed
- stores heat energy and converts it to electrical energy when needed

Your answer is incorrect.

Refer to content page 1.2

The correct answer is:
stores chemical energy and converts it to electrical energy when needed

Question 5

Not answered

Marked out of 1.00

A grid-connected photovoltaic (PV) system converts:

- radiant energy into chemical energy
- thermal energy into potential energy
- chemical energy into radiant energy
- solar energy into electrical energy

Your answer is incorrect.

Refer to content page 1.2

The correct answer is:
solar energy into electrical energy

Question 6

Not answered

Marked out of 1.00

For an electrical system with an efficiency of 92%, what is the required input power to produce an output power of 6 kW?

- 5.48 kW
- 6.52 kW
- 4.68 kW
- 7.32 kW

Your answer is incorrect.

$n = (P_{in} / P_{out}) \times 100$

$P_{in} = P_{out} / (n / 100)$

$6000 / (92 / 100) = 6521$ W = 6.52 kW

Refer to content page 1.2 for further guidance.

The correct answer is:
6.52 kW

Question 7

Not answered

Marked out of 1.00

Identify the correct SI unit of measure for each of the following quantities.

Power	✖
Time	✖
Temperature	✖

Refer to content page 1.2

Question 8

Not answered

Marked out of 1.00

What is the efficiency of an electrical system with an input power of 3.2 kW and an output power of 2.4 kW?

- 95%
- 82%
- 75%
- 90%

Your answer is incorrect.

$n = (P_{in} / P_{out}) \times 100$

$(2400 / 3200) \times 100 = 75\%$

Refer to content page 1.2 for further guidance.

The correct answer is:
75%

Question 9

Not answered

Marked out of 1.00

Which of the following stakeholders is required to prepare the site survey report?

- System designer
- System installer
- Site surveyor
- Client

Your answer is incorrect.

Refer to content page 1.1

The correct answer is:
Site surveyor

Question 10

Not answered

Marked out of 1.00

What types of data should be examined in order to determine the available solar resource at a site?

- All of these are needed to evaluate the solar resource
- Latitude, irradiance and sunshine hours for the site
- The future energy needs of the installation
- Number of socket outlets circuits in the installation

Your answer is incorrect.

Refer to content page 1.1

The correct answer is: Latitude, irradiance and sunshine hours for the site

Question 11

Not answered

Marked out of 1.00

Solar energy is a form of:

- kinetic energy stored in atoms
- magnetic energy stored in magnetic material
- potential energy stored in molecular bonds
- radiant energy emitted from the sun

Your answer is incorrect.

Refer to content page 1.2

The correct answer is:
radiant energy emitted from the sun

Question 12

Not answered

Marked out of 1.00

Which of the following strategies should be used when consulting a client in relation to a site survey?

- Be very quiet and never look them in the eye
- Be vague and wish them good luck
- Be specific and seek confirmation of their understanding
- Be aggressive and let them know you won't accept failure

Your answer is incorrect.

Refer to content page 1.1

The correct answer is:
Be specific and seek confirmation of their understanding

Question 13

Not answered

Marked out of 1.00

Identify the general procedure for undertaking a site survey.

Step 1 Choose...

Step 2 Choose...

Step 3 Choose...

Step 4 Choose...

Step 5 Choose...

Step 6 Choose...

Your answer is incorrect.

Refer to content page 1.1

The correct answer is:
Step 1 → Consult the customer,

Step 2 → Evaluate existing electrical infrastructure,

Step 3 → Evaluate energy usage/needs,

Step 4 → Evaluate site and structures,

Step 5 → Evaluate the solar resource,

Step 6 → Produce a final report

Question 14

Not answered

Marked out of 1.00

Electrical energy is a form of:

- kinetic energy stored in atoms
- magnetic energy stored in magnetic material
- potential energy stored in molecular bonds
- radiant energy emitted from the sun

Your answer is incorrect.

Refer to content page 1.2

The correct answer is:
kinetic energy stored in atoms

Question 15

Not answered

Marked out of 1.00

What is the efficiency of an electrical system with an input power of 2.4 kW and an output power of 2.1 kW?

- 79.5%
- 82.5%
- 87.5%
- 92.5%

Your answer is incorrect.

$n = (P_{in} / P_{out}) \times 100$

$(2100 / 2400) \times 100 = 87.5\%$

Refer to content page 1.2 for further guidance.

The correct answer is:

87.5%

Question 16

Not answered

Marked out of 1.00

Which of the following stakeholders is required to provide access to the site so that the survey can be carried out?

- Client
- Surveyor
- Designer
- Installer

Your answer is incorrect.

Refer to content page 1.1

The correct answer is:
Client