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L2 Quiz Key: Fall Protection

1) OSHA regulations require some type of fall protection above how many feet in residential construction?

a) 4'
b) 6'
c) 8'
d) 10'

6'

Explanation

OSHA 1926.501 specifies that fall protection is required for employees subject to falls greater than 6' in various job site situations. Specifically, it requires workers on low-slope roofs (1926.501(b)(10)) and steep roofs (1926.501(b)(11)), as well as near skylights 1926.501(b)(4) to be protected from falls greater than 6'.

2) To make sure all PV projects are completed safely, employers should have policies and procedures which _____. (Choose three)

a) Allow employees to plan ahead
b) Provide necessary equipment to do job right
c) Provide training to all workers
d) Allow workers to work fast and profitably (or efficient)

Allow employees to plan ahead, Provide necessary equipment to do the job, Provide training to all workers

Explanation

OSHA 1926.501 and 1926.503 outline the responsibilities of employers to provide training and necessary fall protection equipment for employees exposed to fall hazards. Planning ahead will help avoid rushing and last minute discoveries that could cause accidents.

3) True or False: Electrocution is the leading cause of death in the construction industry.

False

Explanation

While electrocution is a significant risk in the solar electric and construction industries, falls are the leading cause of death.

4) Fall protection systems can include which three of the following:
a) Personal fall arrest systems
b) Working on flat roofs only
c) Guardrail systems
d) Safety nets
e) Off-site video monitoring

Personal fall arrest systems, Guardrail systems, Safety nets
Explanation
OSHA 1926.502 specifies the types of fall protection systems that are allowed, and requirements for use. Personal fall arrest systems and guardrail systems are the more common methods used on PV installation sites, but safety nets are also allowed if they are appropriate for the situation and meet the criteria outlined in 1926.502(c).

5) Following OSHA 29 CFR 1926.502(d), choose the three components of a Personal Fall Arrest System from the list below:
a) Hardhat
b) Body harness
c) Anchor
d) ANSI approved work boots
e) Lifeline
f) Proper training

Body harness, Anchor, Lifeline
Explanation
A body harness, anchor, and lifeline are all components of a personal fall arrest system and each have specific requirements as laid out in OSHA 29 CFR 1926.502(d).

6) A properly designed Personal Fall Arrest System must (choose three)
a) Limit maximum arresting force on employee to 1,800 pounds when using a body harness.
b) Be rigged such that an employee cannot fall more than 6 feet.
c) Bring employee to complete stop and limit maximum deceleration distance employee travels to 3.5 feet.
d) Allow for two people to anchor to the same point.
e) Be the same for every solar installation.

Limit maximum arresting force on employee to 1,800 pounds when using a body harness., Be rigged such that an employee cannot fall more than 6 feet., Bring employee to complete stop and limit maximum deceleration distance employee travels to 3.5 feet.
Explanation

OSHA 1926.502(d)(16)(i)-(v) describes the performance requirements of personal fall arrest systems when stopping a fall. Note that systems must be rigged to stop employees from falling more than 6' OR contacting a lower level. So, if a lower level is 4' below the working surface, the system must be rigged to prevent the employee's contact with that lower level.

7) A safety anchor must have the capability of supporting at least _____ pounds per employee attached.
a) 500
b) 1,000
c) 1,500
d) 3,000
e) 5,000

5,000
Explanation
OSHA 1926.502(d)(15) and 1926.1423(g) both contain requirements for anchorages used for attachment of personal fall arrest systems. If the anchor is not capable of supporting 5,000 lbs per employee, a second option allows anchors to be designed, installed, and used as part of a complete personal fall arrest system, with a safety factor of at least two, under supervision of a qualified person.

8) True or False: A body harness used in a personal fall arrest system must have the attachment point located in the center of the wearer's back.

True
Explanation
OSHA 1926.502(d)(17) requires the attachment point of a body harness that is used in a personal fall arrest system to be located in the center of the wearer's back near shoulder level or above the wearer's head. Note that this requirement doesn't apply to positioning systems or fall restraint systems.

9) A 'positioning device system' shall (choose two)
a) Allow PV installer to work with both hands free while leaning.
b) Allow PV installers to accurately perform module layout and installation.
c) Be rigged such that an employee cannot free fall more than 2 feet.
d) Gently lower a worker to the ground from 10 feet or more.

Allow PV installer to work with both hands free while leaning., Be rigged such that an employee cannot free fall more than 2 feet.
Explanation
OSHA 1926.500(b) defines positioning device systems as a body belt or body harness system rigged to allow an employee to be supported on an elevated vertical surface, such as a wall, and work with both hands free while leaning. OSHA 1926.502(e) contains requirements for positioning device systems including maximum free fall limits, allowable connector material types and performance values, and gear inspections.

10) True or False: Roof anchors, dee-rings, and snaphooks with rust on them are not required to be removed from service.

False

Explanation
OSHA 1926.502(e)(9) and 1926.502(d)(21) both state that personal fall arrest and positioning device system equipment must be inspected prior to each use for wear, damage, and deterioration, and any defective equipment must be removed from service.

11) Choose two methods below used to prevent workers from falling more than 6 feet through a skylight.

a) Safety net
b) Guardrails
c) Mechanically close the skylight
d) Show location of ALL skylights on the building plans
e) Personal fall arrest system

Guardrails, Personal fall arrest systems
Explanation
OSHA 1926.501(b)(4)(i) cites personal fall arrest systems, covers, or guardrail systems erected around holes and skylights as acceptable methods for preventing workers from falling through a hole more than 6 feet.

12) True or False: Ropes or lanyards used as part of a fall protection system must be made from synthetic fibers.

True
Explanation
OSHA 1926.502(d)(14) clearly states that ropes and straps (webbing) used in lanyards, lifelines, and strength components of body belts and body harnesses shall be made from synthetic fibers.

13) Dee-rings and snaphooks used in a personal fall arrest system must

a) Have a minimum tensile strength of 5000 pounds.
b) Be proof-tested to minimum tensile load of 3,600 pounds.
c) Be sized to be compatible to that which it is connected.
d) All of the above

All of the above
Explanation
OSHA 1926.502(d)(3)-(5) and 1926.502(e)(5)-(7) both state the criteria listed in a, b, and c. All three answers are required of dee-rings and snaphooks that are used in personal fall arrest systems and positioning devices.

14) After a worker has taken a fall on their personal fall arrest system, it

a) Is allowed to be continued to be used if it is clean.
b) Must immediately be removed from service.
c) Shall be praised for preventing further injury.
d) Can be given to an entry-level employee.

Must immediately be removed from service.

Explanation
OSHA 1926.502(d)(19) mandates that a personal fall arrest system must be removed from service after being subject to impact loading. It may be reintroduced to service only after being inspected by a competent person determines it is undamaged and suitable for continued use.

15) Where a PV installation crew is using vertical lifelines as part of their personal fall protection system,
a) Each employee shall be attached to a separate lifeline.
b) One body harness is allowed to be shared by two installers.
c) The lifeline(s) are only required when climbing vertically up the ladder.
d) The anchor the lifeline(s) is secured to must be designed to hold the weight of all workers.

Each employee shall be attached to a separate lifeline
Explanation
Per OSHA 1926.502(d)(10)(i) each worker must be attached to a separate lifeline.

16) When inspecting fall protection equipment look for
a) Cuts, frays, holes or deterioration of webbing or rope.
b) Deformation of buckles, dee-rings and snaphooks.
c) Rust/corrosion, deformation or damage to anchors.
d) All of the above

All of the above
Explanation

OSHA 1926.502(d)(21) requires that defective components showing wear, damage, and other deterioration to be removed from service. Answers a, b, and c are all forms of wear, damage, or deterioration, and would require equipment that is found to have any of these issues to be removed from service.