

To receive AIA/CES credit, you are required to read the additional online text, which can be found at <http://construction.com/CE/articles/0707roofing-1.asp>
The quiz questions below include information from this online reading.

Program title: **"Sustainable Roofing Strategies: Lowering Energy Costs, Advancing Environmental Goals" (07/07, page 95)**. AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare credit. (Valid for credit through July 2009). **Directions:** Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. **To take this test online, go to: construction.com/CE/**

1. **Urban heat islands occur when:**
 - a. dense available shading from urban parks, trees and vegetation is available.
 - b. global warming increases the sea level of coastal cities in warm climates.
 - c. a city is hotter than the surrounding areas.
 - d. rooftops reflect more solar heat than nearby suburban areas.

2. **Which statement best describes solar reflectance?**
 - a. a measurement that is not used by ENERGY STAR program
 - b. the fraction of solar energy reflected by a roof
 - c. the relative ability of a roof surface to radiate absorbed heat
 - d. lowest index values represent cooler roofs.

3. **Design strategies to obtain LEED® credit for cool roofs should**
 - a. Achieve an SRI value greater than or equal to 78 for low-slope and steep-slope roofs.
 - b. Provide an SRI value of less than 28 for steep-sloperoofs.
 - c. Utilize used or salvaged roofing materials.
 - d. Meet or exceed an SRI value of 78 for low-slope roofs and 29 for steep-slope roofs.

4. **Which of the following statements is true regarding storm water run-off?**
 - a. Impervious conventional roofs, parking lots, and roads reduce flooding risks after heavy rains.
 - b. Storm drains and sewers become overloaded in cities because of vegetation clogging the system, which reduces storm water run-off.
 - c. Continued urban development reduces storm water run-off problems by 20 percent.
 - d. Green roofs reduce peak flow of storm water run-off by as much as four hours, minimizing impact on sewer systems.

5. **Which roofing assembly consists of insulation placed on top of the waterproofing membrane?**
 - a. Traditional roof
 - b. Protected membrane roof
 - c. Graduated slate roof
 - d. White roof

6. **Which of the following is true about asphalt roofing materials?**
 - a. Seven to ten tons of asphalt coated membrane roofing has been sent to the waste stream in the last two years.
 - b. Asphalt roofing materials can be recycled and have no impact on landfills.
 - c. Asphalt roofing waste occupies up to two percent of landfill space in the last 20 years.
 - d. Asphalt coated membrane roofing represents 11 million tons of roofing waste per year, and seven to ten percent of landfill space over the last 40 years.

7. **Which is the best roofing option for mitigating urban heat island effects and reducing storm water runoff?**
 - a. Extensive green roof
 - b. Graduated light colored slate roof
 - c. Domed roof
 - d. Modified bitumen roof

8. **Which roofing system is well suited for coastal areas prone to the high winds and heavy rains associated with hurricane conditions?**
 - a. Standard white roof
 - b. Fluid-applied coating systems and spray polyurethane foam roof
 - c. Intensive green roof
 - d. Standard slate roof

9. **Which is the recommended grade and service life for slate that may be expected to require no repair or replacement due to weathering?**
 - a. Grade SRI greater than or equal to 78 years for low-slope roofs, and 29 years for steep-sloperoofs
 - b. Grade S1 for 75 years
 - c. Grade S3 for 75 years, applies only to graduated, steep-sloped roofs
 - d. Grade PSI for 90 years

10. **ASTM tests measure slate for all of the following qualities except:**
 - a. water absorption.
 - b. weather resistance.
 - c. solar reflectance.
 - d. flexure.

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Material resources used: Article: This article addresses issues concerning health and safety.

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