

1. Which of these is a pre-consumer recycled material?
  - A. Plastic water bottles discarded by building occupants
  - B. Material diverted from a manufacturing process
  - C. Used Office paper
  - D. Material diverted from the waste stream, during the manufacturing process
  
2. What is process water?
  - A. On-site collected rainwater
  - B. Water that is used for industrial processes and building systems, such as cooling towers and chillers.
  - C. Reclaimed wastewater
  - D. Cooling tower makeup water
  
3. What is an intensive workshop that brings people from different disciplines and backgrounds together to explore, generate, and collaboratively produce design options called?
  - A. Team meeting
  - B. Small task group
  - C. Charrette
  - D. Webinar
  
4. How many points are required to earn LEED Gold certification?
  - A. 40-49
  - B. 50-59
  - C. 60-79
  - D. 80 – 100
  
5. According to a University of California–Berkeley study researchers found that, on average, certified green office buildings rented for what percentage more than comparable nearby buildings?
  - A. 2%
  - B. 5%
  - C. 15%
  - D. 30%
  
6. Studies have demonstrated that providing daylight in classrooms can improve student scores by
  - A. 3% to 6%
  - B. 7% to 18%
  - C. 19% to 24%
  - D. 25% to 32%
  
7. A project design team is incorporating daylight into the design. What credit category can they earn points for this is?
  - A. Materials and Resources
  - B. Energy and Atmosphere
  - C. Sustainable Sites
  - D. Indoor Environmental Quality
  
8. Exemplary performance for Sustainable Sites credits is earned in what category?
  -

- A. Innovation
  - B. Sustainable Sites
  - C. Water Efficiency
  - D. Materials and Resources
9. Wastewater from toilets and urinals is
- A. Greywater
  - B. Blackwater
  - C. Potable
  - D. Process water
10. What is the best water for a residential project to use for irrigation?
- A. Greywater
  - B. Spring water
  - C. Potable water
  - D. Well water
11. Which of these design strategies would help to support water efficiency goals to reduce potable water use for landscaping?
- A. Install aerators
  - B. Plant trees
  - C. Use native and adaptive plants
  - D. Replace all the landscaped areas with hardscape
12. Association factors used to determine LEED credit weightings include
- A. Efficacy, Duration, Control
  - B. Scale, Scope, Severity
  - C. Scale, Duration, Control
  - D. Outcomes, Weight, Value
13. Thermal absorption by hardscape, such as dark, nonreflective pavement and buildings, and its subsequent radiation to surrounding areas is known as?
- A. Emissivity
  - B. Heat Island Effect
  - C. GHG
  - D. Solar Reflectivity
14. Designs specifying highly reflective concrete for hardscape surfaces and planting trees to shade hardscape address what sustainability goal?
- A. Protect stratospheric ozone
  - B. Reduce Heat Island Effect
  - C. Energy Efficiency
  - D. Water Efficiency
15. In 1996, what chemical compound was banned from use by the Montreal Protocol?

- A. HFC
  - B. HMP
  - C. CFC
  - D. HCFC
16. Which of these refrigerants can a new construction project use and still earn LEED certification?
- A. Halon
  - B. HFC
  - C. HMP
  - D. CFC
17. Besides humidity and air temperature, what else in the list is a consideration for human thermal comfort?
- A. Sunlight
  - B. Desk lamp
  - C. Air speed
  - D. Diffuser
18. Who is the most responsible individual for the energy efficiency performance of a building on an on-going basis?
- A. LEED AP
  - B. Contractor
  - C. Facility manager
  - D. Commissioning Agent
19. Which of these is a LEED impact category used to determine the sustainability of a project?
- A. Return on Investment; Human health; Biodiversity
  - B. Climate Change; Human health; Business Efficiency
  - C. Climate change; Human health; greener economy
  - D. Return on Investment; Climate Change; Biodiversity
20. What tool is used by the design team to determine the projects level of certification?
- A. Scorecard
  - B. Life-Cycle Costing
  - C. Life-Cycle Analysis
  - D. LEED Interpretations
21. LEED Online is used to
- A. Purchase a LEED Reference Guide
  - B. Manage the entire LEED certification process
  - C. Register to take a LEED exam
  - D. Hire a LEED AP
22. A project owner is building a new project and wants to use materials with the least amount of environmental impact. What tool would you recommend to use?
- A. Life-Cycle Costing
  - B. Life-Cycle Analysis
  - C. TR-55
  - D. GreenScore

23. A building maintenance manager is purchasing a new boiler to replace an existing system. Although the first cost of one of the new boilers being considered is higher, when maintenance, fuel, and operating costs are included the payback over time shows the system to be the most cost effective. What tool is being used to help make the decision?
- A. Life-cycle costing
  - B. Life-cycle analysis
  - C. Performance Rating Method
  - D. Energy Cost Budget Analysis
24. Which of these could help to promote pedestrian access to a project site?
- A. Reduce vehicle speed in the parking lot
  - B. Provide a shuttle to a nearby transit location
  - C. Provide additional parking lot spaces
  - D. Use of a public nature trail that connects the building to other buildings near the site
25. Which of these could help a project to encourage the use of alternative transportation by the building occupants?
- A. Increase the number of preferred parking spaces for carpools
  - B. Bicycle and changing facilities
  - C. Provide a shared vehicle program
  - D. On-site refueling station
26. The units used for water use by a water closet are
- A. Gallons per flush
  - B. Gallons per hour
  - C. Gallons per person
  - D. Gallons per minute
27. Which of these is measured in gallons per minute?
- A. Cooling Tower Makeup Water
  - B. Kitchen Equipment
  - C. Building Flow Fixtures
  - D. Building Flush Fixtures
28. What standard is used to determine minimum indoor air quality?
- A. ASHRAE Standard 55
  - B. ASHRAE Standard 62.1
  - C. ASHRAE Standard 90.1
  - D. ASHRAE Standard 52
29. What is the standard for thermal comfort?
- A. ASHRAE Standard 55
  - B. ASHRAE Standard 62.1
  - C. ASHRAE Standard 90.1
  - D. ASHRAE Standard 52

30. The standard used by ASHRAE for the effectiveness of filtration by air filters is
- A. Minimum Efficiency Reporting Value
  - B. Minimum Efficiency Recording Value
  - C. Maximum Efficiency Reporting Value
  - D. Maximum Efficiency Recording Value
31. What standard is used to determine the ventilation for buildings?
- A. ASHRAE Standard 62.1
  - B. ASHRAE Standard 52
  - C. ASHRAE Standard 55
  - D. ASHRAE Standard 189.1
32. What standard can projects use to compare a buildings efficiency compared to code?
- A. ASHRAE 90.1
  - B. ASHRAE Standard 62.1
  - C. ANSI
  - D. CIBSE
33. What building code adopted ASHRAE 189.1 as an equivalent code?
- A. ASHRAE 90.1
  - B. IGCC
  - C. California Title 24
  - D. SMACNA
34. What international treaty banned the use of CFCs and is phasing out the use of HCFCs?
- A. Kyoto Protocol
  - B. Montreal Protocol
  - C. ASHRAE
  - D. SMACNA
35. Water Efficiency credits currently use what standard for determining baseline indoor water use?
- A. EPAAct 1992, 2005
  - B. WaterSense
  - C. DOE
  - D. LCA
36. Thermal comfort standard
- A. ASHRAE Standard 62.1
  - B. ASHRAE Standard 90.1
  - C. ASHRAE Standard 52?
  - D. ASHRAE Standard 55
37. LEED allows projects to use what for green power?
- A. Incineration of municipal waste
  - B. Solar photovoltaic panels covering the site's parking lot
  - C. RECs for electricity use
  - D. Building-mounted wind turbine

38. Which of these can be used as a renewable energy source?
- A. Clean Coal
  - B. Nuclear
  - C. Methane gas from a landfill
  - D. Natural gas from fracking hard rock
39. A project used a door salvaged from another site. What Materials and Resources credit can this contribute to?
- A. Divert from landfill
  - B. Materials reuse
  - C. Wood products
  - D. Low Emitting Materials?
40. What is a benefit of the Materials and Resources Credit Construction and Demolition Waste Management Planning?
- A. Projects can earn money for recycling cans and bottle
  - B. Increased employee productivity
  - C. Reduces the need for landfills
  - D. Can reduce project cost
41. What is the intent of the Materials and Resources Credit Construction and Demolition Waste Management Planning?
- A. Reduce the need for dumpsters
  - B. Reduce the waste generated by building occupants
  - C. Utilize innovative approaches and techniques for green design and construction
  - D. Divert materials and toxins from landfills
42. What organization is responsible for determining the LEED impact categories?
- A. USGBC
  - B. DOE
  - C. SMACNA
  - D. ASHRAE
43. Which of these strategies would help with maintaining indoor air quality during construction?
- A. Only perform work at night
  - B. Allow all moisture damaged material to dry inside the building
  - C. Keep the building interior clean
  - D. Keep all doors and windows closed
44. Rainwater that flows on the surface of hardscape contributes to what detrimental environmental impact?
- A. Air pollution
  - B. Water pollution
  - C. Heat Island
  - D. Smog

45. Typically, increasing the building size
- A. Decreases the energy use
  - B. Neither increases or decreases
  - C. Increases the energy use
  - D. Is not related
46. Over time, if not mitigated building resource use
- A. Increases
  - B. Decreases
  - C. Stays about the same
  - D. Can't be determined
47. What is the basic level of LEED certification?
- A. Silver
  - B. Gold
  - C. Bronze
  - D. Certified
48. Who can use the USGBC Membership logo?
- A. Only officially recognized USGBC Chapters
  - B. A person who is a member of a local USGBC chapter
  - C. An individual that has passed a LEED accreditation exam
  - D. USGBC member companies with active standing
49. What is the purpose of an occupant survey for thermal comfort?
- A. To allow occupants to leave early
  - B. To reduce the buildings total energy cost
  - C. Increase occupant health which may be compromised by poor outdoor air quality
  - D. To identify areas of concern and take corrective action to fix them
50. Which of these can help the project design team with achieving a project's environmental goals cost-effectively?
- A. Use locally available materials only
  - B. Integrative process
  - C. Low Impact Development
  - D. Energy modeling
51. What tool attempts to identify and quantify environmental effects throughout the life of materials, products, or buildings?
- A. Life-Cycle Assessment
  - B. Life-Cycle Costing
  - C. Triple Bottom Line
  - D. EPAAct
52. Which of these would be a strategy to reduce heat island effect?
- A. Structured parking
  - B. Reduce outdoor lighting
  - C. Decrease roof area
  - D. Open-grid paver plaza

53. In existing buildings, to decrease demand for indoor water
- A. Install new flush valves or flow restrictors
  - B. Reduce the number of water closets installed in the building
  - C. Limit access to restrooms
  - D. Eliminate employee break rooms
54. What policy is implemented after occupancy?
- A. Green Cleaning
  - B. Construction Activity Pollution Prevention
  - C. Fundamental Commissioning
  - D. Indoor Air Quality Policy
55. The triple bottom line concept incorporates a long-term view for assessing potential effects and best practices for natural capital, social capital, and what other resource?
- A. Political capital
  - B. Business capital
  - C. Economic capital
  - D. Corporate capital
56. The construction activity pollution prevention plan addresses what environmental impact?
- A. Green House Gas (GHG)
  - B. Ozone Depletion
  - C. Air borne dust
  - D. Acid rain?
57. What LEED rating system is organized around three main categories, focusing on where, what, and how to build green at a community scale?
- A. LEED for New Construction
  - B. LEED for Homes
  - C. LEED for Neighborhood Development
  - D. LEED for Retail
58. A nonprofit is renovating 3 floors of a 15 floor commercial office building owned by a management firm. What rating system would be appropriate for the project?
- A. LEED ID+C: Commercial Interiors
  - B. LEED BD+C: New Construction and Major Renovations
  - C. LEED O+M: Retail
  - D. LEED BD+C: Retail
59. An owner wants to use a LEED rating system that would allow for the project to commit to on-going sustainability. What rating system would you recommend?
- A. LEED for New Construction
  - B. LEED for Operations and Maintenance
  - C. LEED for Homes
  - D. LEED for Interior Design and Construction

60. What strategy could help to promote a neighborhood pattern that promotes connectivity?
- A. Limit culs-de-sacs
  - B. Don't use a street grid pattern
  - C. Keep sidewalks narrow
  - D. Exclude bike lanes on roadways
61. What system has the largest energy use in a commercial building?
- A. Space heating
  - B. Cooling
  - C. Hot water
  - D. Computers
62. How is lighting power density measured?
- A. Lumens
  - B. Watts per hour
  - C. Lighting power unit per area
  - D. Illuminance per square foot
63. A commercial project was built in an area that has no access to public transit. Which of these would help to reduce the Green House Gas emissions by the building users?
- A. Increase the capacity of the parking lot
  - B. Carpool drop off lanes in front of the building
  - C. Pedestrian access to community services
  - D. Provide a shuttle to a local mall
64. What is the best land to build on?
- A. Wetland
  - B. Habitat
  - C. Brownfield
  - D. Flood plain
65. Which of these are sources of Graywater and Blackwater?
- A. Lavatory faucets and showerheads produce Blackwater
  - B. Sinks and showers produce Graywater, toilets produce Blackwater
  - C. Dishwashers produce Graywater, clothes washers produce Blackwater
  - D. Toilets and urinals produce Graywater, showerheads produce Blackwater
66. Which of these is an energy efficiency strategy?
- A. Night ventilation
  - B. Low flow toilets
  - C. Thermostats
  - D. Garage fans
67. Which of these would help a project to provide building occupants indoor environmental comfort and thermal comfort control?
- A. Operable windows; lighting control; ergonomic furniture
  - B. No smoking inside the building; task lamp; thermostat
  - C. View outside; overhead lighting with sensors; radiant heater
  - D. Vision glazing; lighting control; recycling containers

68. How is exemplary performance earned for LEED credits that allows exemplary performance, as specified in the LEED Reference Guide?
- A. By earning a credit in a different rating system that is not being used by the project
  - B. For having at least two LEED APs on the project
  - C. Typically earned for achieving double the credit requirements or the next incremental percentage threshold.
  - D. Earning a credit specific to the area the project is located in
69. Which of these are LEED Impact categories?
- A. Reverse contribution to Global Climate change; Human Health and Well-Being; Greener economy
  - B. Triple Bottom Line; Water Conservation; Local Biodiversity
  - C. Reverse contribution to Global Climate change; Water Quality Protection; Greener economy
  - D. Forest Stewardship Council; ASHRAE; EPAAct
70. What is included in a Construction and Demolition Waste Management plan?
- A. Quantity of ADC
  - B. Total vegetated area
  - C. List material diverted
  - D. Final project cost
71. What must a Construction Waste Management Plan identify?
- A. Supplier names
  - B. Number of dumpsters
  - C. Quantity of Lead
  - D. Weight/volume of material diverted
72. Which of these would help a project to reduce waste during operation and maintenance?
- A. Have a material reuse plan
  - B. Collect waste hauler reports
  - C. Design for dimensional construction materials
  - D. Enforce a no-smoking policy inside the building
73. Collecting, storing, reusing, marketing, and diverting material to put it back into production is called?
- A. Triple Bottom Line
  - B. Recycling
  - C. Low Impact Development
  - D. Zero Waste
74. A project is renovating an existing building and wants to use green building strategies. What is the first step the design team should do?
- A. Look for Opportunities for Improvement
  - B. Set Goals
  - C. Hire a LEED AP
  - D. Identify local suppliers of green products

75. What is the purpose of LEED prerequisites?
- A. Establish baselines achievable by all projects
  - B. To guarantee project certification
  - C. Make certification easier
  - D. Establish a minimum level of sustainability
76. Besides protect, enhance and restore biodiversity what else does the Forest Stewardship Council (FSC) do?
- A. Limits timber production
  - B. Responsible forest management
  - C. Recycles planer shavings
  - D. Purchases old growth forests
77. To get consensus for LEED strategies what should the design team do?
- A. Provide financial incentives to building inspectors
  - B. Survey the building occupants
  - C. Hold a Charrette
  - D. Have a LEED party
78. Building Emissions
- A. Contribute to global warming
  - B. Are only due to transportation to and from the building
  - C. Can be completely offset by purchasing Green Power
  - D. Are not a significant environmental impact
79. LEED values what type of materials
- A. Extracted, manufactured, and purchased locally
  - B. Materials provided by a single supplier
  - C. Lowest cost materials
  - D. Composite products manufactured locally
80. What refrigerant is being banned in 2015?
- A. Chlorofluorocarbons
  - B. Hydrofluorocarbons
  - C. Volatile Organic Compounds
  - D. Hydrochlorofluorocarbons
81. Which of these is a key indicator of the impact category Promote Sustainable and Regenerative Material Resources Cycles?
- A. Support Occupant Comfort and Well-Being
  - B. Move to Cyclical, Non-Depleting Material Cycles
  - C. GHG Emissions Reduction from Materials Embodied Energy Use
  - D. Sustainable Use and Management of Ecosystem Services
82. Which of these is a 3<sup>rd</sup> party sustainability criteria approved by LEED?
- A. EPAAct
  - B. ASHRAE
  - C. Forest Stewardship Council
  - D. California Title 24

83. What is a useful method to determine the thermal comfort satisfaction of the building occupants?
- A. Wait for occupants to express their dissatisfaction
  - B. Set heating and cooling temperatures to a constant value
  - C. Survey occupants
  - D. Conduct an absenteeism audit
84. Where can projects purchase renewable energy certificates (RECs)?
- A. Almost anywhere
  - B. Only in locations that have deregulated power
  - C. In areas that have a wind farm within 100 miles of the project
  - D. Only from a utility company that has a green pricing program
85. An old hotel is being renovated. The designer wants to use adaptive reuse for the design. Which of these would meet this goal?
- A. Upgrade the existing rooms to larger suites
  - B. Use the old wood floor as wall paneling
  - C. Change the rooms into apartments
  - D. Recycle 95% of the construction demolition
86. Which of these should be included into the budget by the design team?
- A. Furnishings that are FSC certified
  - B. Owners capital
  - C. Contingency for system analysis and evaluation of alternatives
  - D. Water usage
87. Green power is
- A. expensive.
  - B. generated on a project site and sold to a local utility company.
  - C. not available in most cities.
  - D. typically purchased at a premium price
88. Which of the following permanent structures contribute to achieving MR credit Building Life-Cycle Impact Reduction?
- A. Framing
  - B. Elevator
  - C. Process Equipment
  - D. Cooling Tower
89. Landscape designs that aim to eliminate the need for irrigation are called
- A. Micro-irrigation
  - B. Xeriscape
  - C. Drip irrigation
  - D. Evapotranspiration

90. What design strategy would help to reduce the amount of greenhouse gasses created by a commercial building?
- A. Highly efficient HVAC
  - B. Low flow fixtures
  - C. Waterless urinals
  - D. Xeriscaping
91. An existing building is going to be renovated and certified as maintaining sustainability. Which rating system would you recommend the project use?
- A. LEED BD+C: New Construction and Major Renovations
  - B. LEED O+M: Existing Buildings
  - C. LEED ID+C: Commercial Interiors
  - D. LEED ND: Built Project
92. The difference between grey water and black water is
- A. You can drink it
  - B. Use it for irrigation
  - C. Wash clothes with it
  - D. Use it for swimming pools
93. What category for LEED would building for a green community fall under?
- A. LEED for Schools
  - B. LEED for Neighborhood Development
  - C. LEED for Existing Buildings
  - D. LEED for Interior Design and Construction
94. What organization certifies green cleaning equipment?
- A. ASHRAE
  - B. Carpet and Rug Institute (CRI)
  - C. Green Guard
  - D. Green Seal
95. How many points are required to be LEED Certified?
- A. 40-49
  - B. 50-59
  - C. 60-69
  - D. 70-79
96. What is the best method to irrigate?
- A. Drip
  - B. Overhead sprinklers
  - C. flood
  - D. High flow

97. For an average office building in the United States, what percentage more energy is expended by office workers commuting to and from the building than is consumed by the building itself for heating, cooling, lighting, and other energy uses.
- A. < 20%
  - B. 30%
  - C. 150%
  - D. 200%
98. Which LEED impact category supports occupant comfort and well-being?
- A. Promote Sustainable and Regenerative Material Resources Cycles
  - B. Enhance Individual Human Health and Well-Being
  - C. Build a Greener Economy
  - D. Enhance Social Equity, Environmental Justice, and Community Quality of Life
99. Sidewalks designed to be constructed of pervious concrete can aid what?
- A. Open Space
  - B. Light Pollution Reduction
  - C. Rainwater infiltration
  - D. Connectivity
100. An outcome of the Heat Island Effect is
- A. Increased air-conditioning demand in the summer
  - B. Reduced air-conditioning demand in the winter
  - C. Reduced carbon emissions due to increased energy demand
  - D. Fewer roads are built