

Practice Questions from *Leading Green: LEED Green Associate Exam v4 Study Guide*

This question bank provides a collection of multiple-choice practice questions that are designed to help you prepare for the LEED Green Associate Exam. Whether you are just starting your exam preparation or looking to brush up on your skills, these practice questions will help you identify areas of strength and weakness and prepare you for success on exam day.

Questions:

1. LEED® v4 represents current standards of practice, but recommendations for an eventual LEED v5 are in development. What is the committee that is responsible for overseeing a consensus-based approach in accordance with LEED protocols?
 - a) LEED Technical Team
 - b) LEED for Homes Provider
 - c) LEED Consultants
 - d) LEED Board of Directors
 - e) LEED Technical Advisory Groups
- 2) Evaluation of the economic performance of a product over its life cycle is useful in determining using which procedure?
 - a) Triple bottom line accounting
 - b) Life-cycle costing
 - c) Cradle to cradle assessment
 - d) Life-cycle assessment
- 3) A LEED consultant is reviewing project site plans and documentation prior to submitting the project for review. What has the lowest priority in building design?
 - a) Building codes
 - b) Plumbing codes
 - c) Fire protection codes
 - d) LEED rating system
- 4) A project team has decided to take an integrative approach for the design and construction of their new office project. The success of an integrated project team is reliant on:
 - a) Building codes
 - b) Commitment to the sustainability goals
 - c) Meeting the project schedule
 - d) The choice of materials used

- 5) LEED is developed through a consensus-based approach and evolves every few years. What is each LEED rating system composed of?
- a) A mandatory code
 - b) 3rd party standards
 - c) Impact categories
 - d) Voluntary prerequisites
 - e) Credit categories
- 6) While minimum program requirements are essential to LEED in order to ensure compliance, prerequisites are also mandatory. What do all buildings pursuing LEED BD+C: New Construction have to meet?
- a) Have a minimum score of 50 points and achieve all prerequisites
 - b) Must be a permanent structure, use a reasonable site boundary, and have a minimum floor area
 - c) Must have a minimum building height, have a daylighting strategy, and provide for occupant comfort
 - d) Must have access to public transportation, manage rainwater, and have a floor to site area ratio of at least 1.5
 - e) Must have a minimum outdoor air rate, a maximum daylight requirement, and a minimum occupancy number
- 7) The USGBC is a not-for-profit organization that promotes the triple bottom line through its:
- a) Mission Statement
 - b) Vision
 - c) Charter of Values
 - d) Guiding Principles
- 8) LEED v4 has seven Impact Categories to accomplish the goals of the LEED rating system and ensure sustainability. How do the Impact Categories work towards a more sustainable building?
- a) They ensure some credits are achieved without fulfilling all the requirements
 - b) They allow for bonus points if you double the initial credit requirement threshold.
 - c) They are used for credits outside of the scope of the LEED rating system.
 - d) They determine which credits are worth more points.
 - e) They have additional credit requirement options.
- 9) Which of the following LEED Impact Categories aims at supporting local economies and strengthening the green building industry through supply chain support?
- a) Build a Greener Economy
 - b) Enhance Human Health and Well-Being
 - c) Reverse Contribution to Global Climate Change
 - d) GHG Emissions Reduction from Materials and Water Embodied Energy Use
 - e) Protect, Enhance and Restore Biodiversity and Ecosystem Services

- 10) Looking at the economic side of the triple bottom line, which of the following factors impact the cost of LEED certification?
- a) The square footage of the building
 - b) The number of full time equivalents
 - c) The building type
 - d) The reinforcement of the buildings foundation
- 11) In November 2016, LEED v4 was released after being delayed a year and was renamed from LEED 2012 after an open consensus process. Which of the following ensures this process stays intact?
- a) The addition of new LEED adaptations
 - b) The feedback projects receive from LEED credit reviewers
 - c) Government regulations
 - d) Board of Directors issues shareholder voting rights
 - e) The balloting process with USGBC membership
- 12) A major focus in LEED is to ensure that a building is located on a site that is near diverse uses, in a dense area and has developmental constraints. Which credit category specifically encourages that?
- a) Smart Location and Linkage
 - b) Location and Transportation
 - c) Awareness and Education
 - d) Sustainable Sites
- 13) Which of the following options is not addressed in the minimum program requirement (MPR) in LEED?
- a) The LEED boundary
 - b) Project size
 - c) Project's location on existing land
 - d) A project's energy efficiency
- 14) The Integrative Process was previously just a principle of sustainability, but with LEED V4, it is now actually worth a point. Which of the following demonstrates a team using the Integrative Process concept of the Systems Thinking approach?
- a) Focusing on the initial cost of bamboo flooring
 - b) The mechanical designer completing his or her design and handing it off to the electrical designer
 - c) Establishing water saving metrics for measuring success
 - d) Ending the green building process when the project team hands the site over to the owner
 - e) Working independently to complete each stakeholder's task efficiently

- 15) LeadingGreen wants to establish green building goals across the entire design while using stakeholders' expertise. What workshop helps achieve this?
- a) Integrative Process workshop
 - b) Facility and Engineering workshop
 - c) Charrette
 - d) LEED Round Table
 - e) Technical Team workshop
- 16) Quadrel Development Inc. is beginning their first LEED project and has contacted LeadingGreen for some consulting services. What obstacles will Quadrel face?
- a) The additional time for the integrative process
 - b) Substantial Cost increase due to LEED
 - c) Substantial schedule extension due to LEED
 - d) Convincing their owner to watch from the sidelines
- 17) Northeastern University is attempting to create a LEED Platinum® laboratory for its engineering department. What task must the integrative project team complete?
- a) Establish a target certification level
 - b) Ensure proper finance requirements are met
 - c) Identify opportunities for synergy
 - d) Develop models for water and energy consumption
- 18) The most significant difference between a conventional linear design process and an Integrative Process is?
- a) The Integrative Process is iterative
 - b) The Integrative Process is hierarchical instead of linear
 - c) The Integrative Process requires all project team members
 - d) The Integrative Process has shorter schedules
 - e) The Integrative Process does not include a schematic design
- 19) A new building is being constructed in the hot climate of Mexico City. The green building design includes a vegetative roof and an air-tight envelope to reduce air changes per hour and increase building efficiency. What will need to be considered due to this design?
- a) Noise and vibrations due to air-tight envelope
 - b) Bringing in additional fresh air for indoor air quality
 - c) If the building has extensive glazing cooling loads will increase
 - d) The lack of daylighting due to schematic design
 - e) ISO 14000 standards
- 20) Which of the following decreases as a project's timeline progresses?
- a) Cost of renewable technologies
 - b) Risk of litigation
 - c) Ability to control costs
 - d) Cost of design changes

- 21) The Location and Transportation credit category awards points for selecting a site within a walkable proximity to a number of “diverse uses”. Which is not a “diverse use”?
- a) An automated teller machine (ATM/ABM)
 - b) A public park
 - c) A barber shop
 - d) A grocery store
 - e) A police station
- 22) How can an infill site positively affect the economic side of the triple bottom line?
- a) By permitting additional renewable energy access
 - b) By increasing the availability of conventional grid source energy
 - c) By reducing infrastructure costs
 - d) By increasing grid reliability through demand response programs and thus lowering operational fees
- 23) Smart growth is a commonly used term to describe a best practice. Which of the following does not comply with this best management practice?
- a) Building up as opposed to out
 - b) Selecting a site that is far from existing communities
 - c) A site within walking distance to shops and offices
 - d) A site near a frequently serviced bus stop
- 24) Employee health is addressed in two categories, EQ and LT. Which of the following would earn LEED point(s)?
- a) Select a site within walking distance of a bicycle network
 - b) Add preferred parking for accessibility
 - c) Add preferred parking for green vehicles only
 - d) Locate the project near existing infrastructure
- 25) How can satisfying the credit for High Priority Site benefit the community?
- a) A contaminated site will be less expensive to purchase
 - b) Help to revitalize the neighbourhood
 - c) Increase the local tax base to property taxes rise
 - d) Building new infrastructure
- 26) During the integrative process, a team is trying to find the best strategy to protect and/or restore the habitat on a previously developed site. What is one common strategy that helps lead to this credit?
- a) Build up as opposed to out
 - b) Use low impact development and green infrastructure
 - c) Restore soils and revegetate the site
 - d) Plant invasive species over existing previous hardscapes

- 27) A project is under construction in Manhattan and has a near zero lot line, which makes it difficult to manage rainwater. What can this project do?
- a) Place 75%+ of parking under the building
 - b) Shade all hardscapes with high SRI surfaces
 - c) Install a vegetative roof
 - d) Do not use a demand response system
- 28) Open space can contribute to many credits in multiple credit categories. Select the example of quality open space:
- a) A jogging trail around a natural wetland
 - b) A private courtyard
 - c) A storm water retention basin
 - d) An urban garden adjacent to the project
 - e) Neighbouring fields of native vegetation
- 29) What contributes to Heat Island Effect?
- a) Underground parking with a high SRI roof
 - b) Steeply sloped roofs
 - c) Reduced airflow due to tall buildings and narrow streets
 - d) Athletic fields covered in turf grass
 - e) Shading due to small trees
- 30) A developer has selected to construct their headquarters beside a protected wetland. The goals of the project are to reduce energy consumption, mitigate the Heat Island Effect, ensure the buildings occupants will be healthy, and protect the wetland's habitat. How can the developer accomplish this?
- a) Ensure maximum project durability
 - b) Complete a site assessment in the integrative process
 - c) Source strictly locally extracted and manufactured materials
 - d) Lease renewable energy from a neighbouring wind turbine farm
 - e) Implement xeriscaping and use no potable water for irrigation
- 31) Innovert Real Estate Investment Trust is reviewing its current portfolio and notices an immense amount of water being consumed in its older building stock, which is costing a lot due to increasing water prices. It is cost-prohibitive to replace all the plumbing, so the project team suggested alternative approaches to reduce potable water. Which are the most efficient ways to reduce potable water?
- a) Installing new low-flow aerators
 - b) Installing PV array to heat the water
 - c) Reducing the number of cooling tower cycles
 - d) Treat wastewater onsite

- 32) A LEED consultant is reviewing calculations required to manage rainwater and reduce irrigation needs on the site. What information is required?
- a) Occupancy counts
 - b) Evaporation rates in the sky
 - c) Size of high SRI roof
 - d) Location of drip irrigation system
 - e) Precipitation data
- 33) Which of the following is an example of greywater?
- a) Used water that has not come in contact with toilet waste or kitchen sinks
 - b) Rainwater collected in a retention pond
 - c) Wastewater from urinals
 - d) Stormwater collected and held in a cistern
- 34) The EPAct of 1992 states that the baseline water use of an apartment's bathroom faucet is:
- a) 1.6 gpf
 - b) 2.2 gpm
 - c) 0.5 gpm
 - d) 1.0 gpf
- 35) The facility manager has installed permanent submeters for a few systems. What will this not help with?
- a) Measuring the quality of reused stormwater
 - b) Locating leaks in the system
 - c) Tracking consumption
 - d) Evaluating the actual fixture efficiency
- 36) Looking at the economic side of the triple bottom line, what is the most significant savings that results from water efficiency?
- a) Reduced development costs
 - b) Maintaining contaminants at safe levels in reservoirs and aquifers
 - c) Reduced permitting fees
 - d) Reduced maintenance costs
- 37) How can a civil engineering team properly grade the site and determine the baseline measurement for outdoor water use on a project?
- a) Follow the EPAct 1992
 - b) Use the ENERGY STAR Portfolio Manager®
 - c) Follow international plumbing codes
 - d) Perform an analysis of neighbouring properties
 - e) Use the EPA WaterSense Water Budget Tool
- 38) What provides legal protection of the ozone layer in the U.S.?
- a) U.S. Environmental Protection Agency (EPA)
 - b) Kyoto Protocol
 - c) U.S. Department of Energy (DOE)
 - d) The Montreal Protocol on Substances That Deplete the Ozone Layer

- 39) Renewable energy purchased as a carbon offset must meet which of the following criteria?
- a) Green-e Climate Certified
 - b) ENERGY STAR
 - c) Purchased and used within the same state or locale
 - d) Center for Renewable Solutions
- 40) Which of the following is not from a source of alternative or renewable energy?
- a) Renewable energy production
 - b) Green power
 - c) Carbon offsets
 - d) Demand response
- 41) The greatest threat to global warming potential is presented by which group of refrigerants?
- a) CFCs (ChloroFluoroCarbons)
 - b) HCFCs (HydroChloroFluoroCarbons)
 - c) HFCs (HydroFluoroCarbons)
 - d) CFC-500 (ChloroFluoroCarbons)
- 42) Which strategy can the project team suggest if the building owner wants to maintain ongoing energy efficiency and performance?
- a) Enhanced commissioning
 - b) Retrocommissioning
 - c) Building automation systems
 - d) Enhanced refrigerant management
- 43) Production of CFCs are banned under the Montreal protocol and HCFCs will be phased out by when?
- a) 2015
 - b) 1995
 - c) 1992
 - d) 2020
 - e) 2030
- 44) When does commissioning take place?
- a) Substantial completion phase
 - b) Schematic design phase
 - c) Before occupancy
 - d) Discovery phase
- 45) LeadingGreen just signed a contract with the City of Toronto that allows the company to work out of an historic building. How can the city achieve carbon neutrality for the building?
- a) Cover the building with solar panels
 - b) Use a combination of solar thermal and solar panels
 - c) Participate in a demand response program
 - d) Purchase RECs equivalent to the total cost of annual energy consumption
 - e) Purchase carbon offsets

- 46) A company is looking at passive and mechanical methods of lowering the building's energy load, such as:
- a) Installing a PV array on its roof
 - b) Purchasing RECs
 - c) Decreasing thermal massing
 - d) Configuring the building to minimize solar gain in summer and maximize it in winter
- 47) Who is the stakeholder on a project team responsible for verifying the performance and testing of building systems?
- a) Commissioning Authority
 - b) Owner
 - c) Building Engineer
 - d) Green Rater
- 48) What type of energy is used by products that are powered by means of an ordinary AC plug?
- a) Process energy
 - b) Process load
 - c) Plug load
 - d) Unregulated load
- 49) In LEED v4, credits have been streamlined and numerous standards have been introduced in the Materials and Resources Category. Which group of credits is Environmental Product Declarations under?
- a) Construction and Demolition Waste Management
 - b) Storage and Collection of Recyclables
 - c) Building Life-Cycle Impact Reduction
 - d) Building Product Disclosure and Optimization
- 50) Cork ceiling tiles have the ability to be recycled and completely reused for flooring at the end of their life. Which term describes this approach?
- a) Sustainable product
 - b) Cradle to gate
 - c) Cradle to cradle
 - d) Passive
 - e) Rapidly renewable
- 51) A development team bought a brownstone house. What would be the best way to select windows?
- a) Reuse the existing structures old windows
 - b) Buy old windows
 - c) Select only triple glazed windows
 - d) Consider the embodied energy of windows when purchasing replacements
- 52) What is the overarching goal of the Materials and Resources credit category?
- a) Minimize the embodied life-cycle impacts of the building materials
 - b) Minimize the life-cycle of building materials
 - c) Reduce the quantity of materials used on a project
 - d) Select materials that have the most environmental benefits at the least cost
 - e) Select energy efficient building materials

- 53) A project development team just purchased an entire city on the coast of Oregon. Which of the following is one way that the project developer could successfully complete 'adaptive reuse'?
- a) Retrofitting a historic home to ENERGY STAR certification
 - b) Plan a school so that classrooms can be divided into separate class spaces
 - c) Designing a building with a flexible floor plan that can accommodate offices or apartments
 - d) Renovating an old steel mill into an apartment complex
- 54) The integrative process is a crucial part of every credit category and results in environmental protection and money saved. How can the architect work with the contractors to ensure that the contractors purchase the correct materials?
- a) Clearly explain to the contractors in the LEED Charrette
 - b) Only use LEED Online to select materials
 - c) Ensure that the purchasing policy specifies LEED approved products only
 - d) Send the contractors an email in the pre-predesign phases
 - e) Include the specifications in the purchasing policy
- 55) Which one of the following does not need to be considered when setting aside a location for the storage and collection of recyclables?
- a) Access to waste haulers
 - b) Special equipment
 - c) Handling of certain items such as electronic waste and mercury containing lamps
 - d) Having a separate dumpster for each material
- 56) Apple Inc. promotes an open-office concept, but also wants to use daylighting for entire floors, which has a number of trade-offs. How can they ensure that everyone receives adequate light?
- a) Manual shades
 - b) Zoned daylighting controls
 - c) Increase the number of operable windows
 - d) Install light shelves on the south and north building façade
 - e) High reflective surface coatings
- 57) A project is attempting to meet the EQ credit for enhanced air quality. Which of the following would be well suited for an entryway system?
- a) Bamboo floor made in another country
 - b) Carpeted tiles shipped from overseas
 - c) Stone tiles extracted and manufactured on-site from construction and demolition debris
 - d) Low VOC rubber mat
- 58) An extermination company is going out of business because building owners are reducing the need for pesticides by:
- a) Planting only native/adaptive species 2 feet away from the building footprint
 - b) Ensuring SMACNA guidelines are followed
 - c) Installing pervious pavement 2 feet around the building perimeter
 - d) Developing a coordinated program of nonchemical strategies

- 59) Off-gassing of contaminants is a major degrader of the indoor air quality of a building. What products need to be analyzed to determine their VOC content?
- a) ETS signs on the exterior
 - b) Granite floors
 - c) Wall paint
 - d) Granite counters
 - e) Acoustic insulation
 - f) Desks
- 60) The existing TD office towers in downtown Toronto, which were constructed with single-pane windows, is retrofitted to include double-pane glass. This can lead to:
- a) Decreased daylight
 - b) Increased views
 - c) Decreased energy demand
 - d) Increased thermal control
 - e) Increased energy efficiency
- 61) A facility manager is looking for information on how to improve IAQ throughout the life of the building. Which of the following strategies will support this goal?
- a) Locating air intakes away from garages and automobile exhaust
 - b) Selecting materials with low VOC and off gassing potential only
 - c) Outlining green cleaning procedures and goals for custodians
 - d) Full building flush-out and indoor air quality testing prior to occupancy
- 62) How does the USGBC define quality views?
- a) Objects with a CRI of 80+
 - b) Flora, fauna, or sky
 - c) Views of art inside
 - d) A plant sitting on the window sill
- 63) Value engineering can result in reduced level of sustainability or just a more cost-effective approach. Which of the following would be an example of one?
- a) Salvaging more waste and recycling through a waste-to-energy on-site plant
 - b) Selecting materials with a higher initial cost but lower life-cycle cost
 - c) Selecting a renewable energy technology that reduces environmental impact but costs more than grid energy
 - d) Replacing an asphalt parking lot with a cheaper, cool-coloured gravel
- 64) A project is located in northern Ontario and wants to take advantage of the area's environmental assets. Which credit category addresses the needs of this unique location?
- a) Regional Priority credits
 - b) Location and Transportation credits
 - c) Local zoning
 - d) MPRs
 - e) Prerequisites

- 65) Adaptive reuse, selecting to build infill, and regenerative design are all items encouraged in LEED and green building in general. What is an example of regenerative design?
- a) A net-zero certified energy building
 - b) A building that generates electricity and sends the excess to the grid
 - c) A living building challenge certified building
 - d) A building that treats all of its waste water on-site
 - e) A project with a community garden and recycling program
- 66) What does not affect a project's certification fees?
- a) The amount of LEED credits pursued
 - b) The amount of LEED prerequisites pursued
 - c) The amount of LEED MPRs pursued
 - d) Review path for submittals
- 67) The USGBC requires reporting different building parameters at least every 5 years to increase transparency, as well as to:
- a) Reduce life-cycle costs
 - b) Reduce future project initial costs
 - c) Contribute to knowledge that will advance research in the future
 - d) Decrease the energy use intensity of the building
- 68) Parking footprints are large contributors to the Heat Island Effect. What is an example of a local ordinance?
- a) A strategy for reducing the Heat Island Effect
 - b) A law usually found in a municipal code
 - c) A regulation imposed to promote orderly development of private lands and prevent land-use conflicts
 - d) A recommendation on how to zone for energy modeling
- 69) What is TRUE about credit forms submitted via LEED Online?
- a) The forms can be changed until they are submitted for review to the GBCI
 - b) The project administrator must sign off on all credits prior to submittal
 - c) Each form is reviewed within 2 weeks after document submittal
 - d) Other projects and the public can view them for assistance

Answers:

1. e - LEED Technical Advisory Groups
2. b - **Life-cycle costing.**

The key term here is economic performance (cost) over the life-cycle.

3. e- LEED rating system

Don't forget that projects must first meet local and regional codes (ex. building, plumbing, and fire protection codes), as they are law and LEED is voluntary.

4. b – Commitment to sustainability goals
5. e – Credit categories

Within each of the credit categories, there are specific prerequisites that projects must satisfy and a variety of credits that projects can pursue to earn points. The number of points the project earns determines its level of LEED certification

6. b – Must be a permanent structure, use a reasonable site boundary and have a minimum floor area

The minimum program requirements state that a project must:

Minimum program requirement 1. Must be in a permanent location on existing land

Minimum program requirement 2. Must use reasonable LEED boundaries

Minimum program requirement 3. Must comply with project size requirement

7. d – Guiding Principles
8. d – They determine which credits are worth more points
9. a – Build a greener Economy

The Build a Greener Economy Impact Category components are:

- Enhance the Value Proposition of Green Building
- Strengthen the Green Building Industry and Supply Chain
- Promote Innovation and Integration of Green Building Products and Services
- Incentivize Long Term Growth and Investment Opportunities
- Support Local Economies

For more information on impact category details please see here -

<https://www.usgbc.org/resources/leed-v4-impact-category-and-point-allocation-process-overview>

10. a - The square footage of the building

The square footage of the project is the primary cost consideration for LEED certification. Remember certification and registration fees are not the same. Generally, the bigger the

building, the higher the cost and the smaller the building the lower the cost as compared to the other options here.

11. e – The balloting process with USGBC membership

12. b – Location and Transportation

Smart Location and Linkage credits promote walkable neighborhoods with efficient transportation options and open space, and is in LEED ND only. Sustainable Sites credits encourage strategies that minimize the impact on ecosystems and water resources.

13. d – A project's energy efficiency

Each LEED rating system has 3 identical MPRs. The project in question must be in a permanent location on existing land, it must use reasonable LEED boundaries, and it must comply with minimum project size requirements (GFA).

14. c – establishing water saving metrics for measuring success

15. c – Charrette

The charrette is one of the first things that should occur for a new project. A charrette should be held no later than the design development phase and preferably during schematic design.

16. a – the additional time for the integrative process

Some of the obstacles teams face with people new to green building include cost and time of meetings as well as resistance to change

17. c – Identify opportunities for synergy

Before any design takes place, all team members assemble, and every issue is hashed out. Each team member has a specific expertise, and brings specific information together to find opportunities to collaborate

18. a – The Integrative Process is iterative

19. b – Bringing in additional fresh air for indoor air quality

A negative result of having a tight building envelope is that the air inside becomes stagnant. Increased ventilation needs to be implemented to bring in more fresh air, thus improving air quality. However, it should be noted that increasing fresh air ventilation more energy is needed to treat it.

20. c – Ability to control costs

In a typical project, it is expensive to make changes late in the construction phases, and green features are often value engineered out of the project. This is why the Integrative Process is an invaluable design approach that can save money through collaboration with key stakeholders at an early stage in the project.

21. a – An automated teller machine (ATM/ABM)

A “diverse use” is a distinct, officially recognized space that falls into one of the following categories: food retail, services, community retail, civic & community uses, and education facilities.

22. c – By reducing infrastructure costs

An infill site would already be connected to existing utility lines, streets, and other infrastructure, thus saving money that would otherwise be spent developing these items.

23. b – Selecting a site that is far from existing communities

24. a – Select a site within walking distance of a bicycle network

A bicycle network directly translates to LEED points. In the credit for Green Vehicles, preferred parking must be created as well as a percentage of those parking spaces equipped with EV charging stations.

25. b- help to revitalise the neighbourhood

26. c- Restore soils and revegetate the site

On-site restoration involves restoring compacted soils and revegetating. The others help with rainwater management or increasing open space.

27. c- Install a vegetative roof

Projects on an urban site with a zero lot line (the building footprint is on the site limit) will have to use green infrastructure (GI) (ex. vegetative roofs) and low-impact development (LID) rainwater management strategies (harvesting rainwater) since there is no land.

28. a – A jogging trail around a natural wetland

A walking/jogging trail around a natural wetland encourages social interaction and physical activity, so it counts as open space. The other options are either off-site or exclusive.

29. c- reduced airflow due to tall buildings and narrow streets

30. b – complete a site assessment in the integrative process

An early site assessment is the only item here that can impact the 4 project goals, as the others are only targeting specific credits.

31. a – installing new low-flow aerators

The best option here is to install new aerators to reduce outdoor potable water usage. All other options are incorrect and reducing cooling tower cycles = increase in water usage. On a more general note, the purchasing plan requires that all new fixtures be WaterSense labeled.

32. d – Precipitation data

The consultant must know how much rain falls in order to manage it and use it for irrigation. Evapotranspiration is useful too, but not just evaporation.

33. a- Used water that has not come in contact with toilet waste or kitchen sinks

Greywater is defined by the UPC and include:

Rainwater collected in a retention pond
Stormwater collected and held in a cistern
Wastewater from urinals = blackwater

34. b- 2.2 gpm

Gallons per minute (gpm) describes a faucet's flow rate, while gallons per flush (gpf) refers to a toilet's water usage. The fact that it states apartment gives away that we are asking about a private faucet's flow rate.

35. a- measuring the quality of reused stormwater

To determine the quality of the water, a water test would need to be done.

36. d – Reduced maintenance costs

A lot of energy is used to heat, cool, and distribute water within a building, with water heating in commercial buildings alone accounting for 15% of total energy use (CBECS). Reducing the quantity of water used (increasing efficiency) has a direct impact on the amount of energy used, and thus the total maintenance costs.

37. e – Use the EPA WaterSense Water Budget Tool

38. a – U.S. Environmental Protection Agency (EPA)

39. a – Green-e Climate Certified

For the Green Power and Carbon Offsets credit category (EAc7), a project must purchase 35% of the building's electricity consumption for at least 2 years. The project team can purchase renewable energy certificates (RECs) (or tradable renewable certificates (TRCs)), carbon offsets, or renewable power from a Green-e certified provider. Green-e is a certification program for renewable energy producers. LEED typically recognizes renewable energy if it has been certified by the Center for Resource Solution or meets the Green-e requirements. Green-e Climate certification is for qualifying carbon offsets for LEED.

40. d- Demand response

Demand Response (DR) Programs involve utility companies contacting consumers with a request to cut back on their power draw during a curtailment event (e.g. severe weather, heavy load on the grid, utility company maintenance). DR is simply a contract agreement between the utility company and consumer (usually large commercial or industrial) and not a form of alternative or renewable energy.

41. c – HFCs (HydroFluoroCarbons)

Gases that trap heat in the atmosphere are called greenhouse gases. LEED addresses the two main threats to the environment, posed by refrigerants: their ozone depletion potential (ODP) and their global warming potential (GWP). The primary list of refrigerants, and their properties, are:

- CFC (ChloroFluorCarbons) - Stable and long life, with greatest ODP caused production and banned in North America on new buildings since 2010

- HCFC (HydroChloroFluorCarbons) - Stable and short life, not as high ODP as CFCs, allowing for a phase-out plan
- HFC (HydroFluorCarbons) - Negligible impact on the ozone layer, but significant GWP
- Halocarbons - Used in the cells of foamed insulation and fire-fighting systems.

42. c – Building Automation Systems

43. e – 2030

44. a – Substantial completion phase

45. e – Purchase carbon offsets

46. d – Configuring the building to minimize solar gain in summer and maximise it in winter

This strategy maximizes a building's ability to use natural lighting and natural heating, thus decreasing its energy requirements and its energy load.

47. a – Commissioning Authority

48. c – Plug load

49. d – Building Product Disclosure and Optimization

While Environmental Product Declarations are meant to reduce the life-cycle impact of the building, that is not the name of the credit category. Environmental Product Declarations (MRc2) is a credit under Building Product Disclosure and Optimization. MRc2 rewards teams for selecting products from manufacturers who have verified they have improved environmental life-cycle impacts.

50. c – Cradle to cradle

Cradle to cradle is a term used in life-cycle analysis to describe a material or product that is recycled into a new product at the end of its useful life. Cradle to cradle is an example of a closed-loop system, while "cradle to gate (or grave)" is a destructive open-loop system that produces waste.

51. d – Consider the embodied energy of windows when purchasing replacements

Embodied energy is an accounting methodology that aims to find the total energy consumed over a product's entire life-cycle. The life-cycle includes raw material extraction, transport, manufacture, assembly, installation, disassembly, deconstruction and/or decomposition.

52. a – Minimize the embodied life-cycle impacts of the building materials

53. d – Renovating an old steel mill into an apartment complex

Adaptive reuse is the practice of redesigning a structure for a use that is significantly different from the building's original use. The office/apartment option is an example of design for flexibility.

54. e – Include the specification in the purchasing policy

Specifications are created by architects and given to the contractors to ensure that the right quantity and types of materials are purchased. Specifications include drawings of what is to be built.

55. d – Having a separate dumpster for each material

56. b – Zoned daylighting controls

- 57. d – Low VOC rubber mat
- 58. d – Developing a coordinated program of nonchemical strategies
- 59. c – Wall paint

VOCs are substances that vaporize at room temperature and can cause health problems. VOCs off-gas from many materials, including adhesives, sealants, carpets, particleboard, and paints. Granite is naturally occurring, with no VOCs. With acoustic insulation and desks, it depends on the materials used to make them.

- 60. c – Decreased energy demand

The design of the building envelope (including the glazing) impacts the energy demand of the building. Double-pane glazing is a better insulator than single-pane glazing.

It is important to note that while more glazing (windows) increases daylight, the heat gain from allowing more light in may increase HVAC loads.

Energy efficiency refers to less energy being used to accomplish the same amount of work, which is not the case here.

Thermal control is achieved with thermostats and/or operable windows

Thermal comfort could have been an answer, but that is not an option.

Increased energy efficiency - is incorrect because the term efficiency is used for active system improvements (lighting, HVAC etc..)

Decreased energy demand is correct because this is a passive design improvement through better insulation

- 61. c – Outlining green cleaning procedures and goals for custodians

This question is easy if you identify that all but one option must be completed prior to occupancy, and thus are not a part of the Operation and Maintenance that a facility manager would perform. Part of green cleaning involves including the custodians in the integrative process to get their input and to work together to create goals and procedures for reducing indoor contaminants from cleaning chemicals. There are credits in LEED For Existing Buildings for green cleaning

- 62. b – Flora, Fauna, or sky

Objects close to the windows and flora, fauna, or sky are the definitions noted in the reference guide.

- 63. d – replacing an asphalt parking lot with cheaper, cool-coloured gravel

Value engineering (VE) is a review process that selects the lowest life-cycle cost options in design, materials, and processes that achieve the desired level of performance, reliability, and customer satisfaction.

- 64. a – Regional Priority credits

- 65. b – A building that generates electricity and sends the excess to the grid

- 66. a – The amount of LEED credits pursued

Prerequisites and MPRs must be met regardless so they are not the answer. The actual number of credits pursued has no affect on the certification fees paid to the GBCI and its reviewers

67. c – Contribute to knowledge that will advance research in the future

68. b - a law usually found in a municipal code

69. a – the forms can be changed until they are submitted for review to the GBCI