Sustainable Building Strategies

Part 1: Dialogue

Mark (Architect): Sarah, I've been reviewing our plans, and I think we should incorporate more **passive design** strategies to improve energy efficiency.

Sarah (Sustainability Consultant): I completely agree. If we optimize **solar orientation**, we can maximize natural daylight and reduce reliance on artificial lighting.

Mark: Exactly! Also, have you considered adding a **green roof**? It would help with insulation and stormwater management.

Sarah: That's a great idea. Plus, it can contribute to our **LEED certification** by improving thermal performance and reducing heat island effects.

Mark: Speaking of LEED, we should also integrate a **rainwater harvesting** system to reduce water consumption and support landscape irrigation.

Sarah: Absolutely. It would be a valuable feature for sustainability and might even reduce water utility costs.

Mark: If we implement all these strategies, we'll have a much more energy-efficient and environmentally friendly design.

Sarah: Yes! And I can help with the documentation to ensure we meet LEED requirements.

Mark: Perfect. Let's finalize the plans and present them to the client. I think they'll appreciate the long-term benefits.

Sarah: Agreed. Sustainable design is the future, and this project is a great opportunity to showcase it!

Part 2: Comprehension Questions

1. What is a **green roof** commonly used for?
   (A) Increasing the height of a building
   (B) Providing additional structural support
   (C) Improving insulation and managing stormwater
   (D) Enhancing the building's fire resistance
2. How does **solar orientation** affect a building's design?
   (A) It influences natural lighting and heating efficiency
   (B) It determines the building's color scheme
   (C) It controls the air ventilation system
   (D) It affects the foundation structure
3. Why is **rainwater harvesting** beneficial?
   (A) It helps cool the building's interior
   (B) It increases wind resistance
   (C) It enhances fire safety measures
   (D) It reduces water consumption and supports irrigation
4. What is the purpose of **LEED certification**?
   (A) To improve a building's resale value
   (B) To ensure compliance with fire safety regulations
   (C) To recognize sustainable and environmentally friendly buildings
   (D) To approve new construction materials

Part 3: Vocabulary with Definitions

- **Passive design (パッシブデザイン)** – A design approach that reduces energy use by utilizing natural elements like sunlight, wind, and shading.
- **Green roof (緑化屋根)** – A roof covered with vegetation that provides insulation, absorbs rainwater, and reduces heat buildup.
- **LEED certification (LEED 認証)** – A globally recognized standard for environmentally friendly building design and energy efficiency.

- **Solar orientation (太陽光の向き)** – The positioning of a building to maximize energy efficiency by optimizing sunlight exposure.
- **Rainwater harvesting (雨水収集システム)** – A system that collects and stores rainwater for reuse, reducing water demand.

Part 4: Answer Key

1. **What is a green roof commonly used for?**
   ✅ (C) Improving insulation and managing stormwater
2. **How does solar orientation affect a building's design?**
   ✅ (A) It influences natural lighting and heating efficiency
3. **Why is rainwater harvesting beneficial?**
   ✅ (D) It reduces water consumption and supports irrigation
4. **What is the purpose of LEED certification?**
   ✅ (C) To recognize sustainable and environmentally friendly buildings