


Name:			
Enrolment No:			
<b>UPES</b> <b>End Semester Examination, May 2024</b>			
<b>Course: Green Building Technologies</b> <b>Program: B. Tech RSEE</b> <b>Course Code: EPEG3034</b>		<b>Semester : 6<sup>th</sup></b> <b>Time : 03 hrs.</b> <b>Max. Marks: 100</b>	
<b>Instructions:</b>			
<b>SECTION A</b> <b>(5Qx4M=20Marks)</b>			
S. No.		Marks	CO
Q 1	'Policies and regulations can significantly influence energy conservation efforts in the building sector and contribute to economic growth'- Explain.	4	CO1
Q 2	Explain the advantages and disadvantages of using low-VOC or VOC-free paint, adhesives, and sealants in construction.	4	CO1
Q 3	Provide some innovative technologies and materials available for improving the performance of building components.	4	CO2
Q 4	Describe the role do ducts and ventilation systems play in HVAC distribution and indoor air quality.	4	CO2
Q 5	Justify the importance of electrical safety measures in building design and operation.	4	CO3
<b>SECTION B</b> <b>(4Qx10M= 40 Marks)</b>			
Q 6	In what way do design and material choices for foundations, roofs, attics, windows, doors, and plumbing systems influence building energy efficiency and durability.	10	CO2
Q 7	Define building audits, and why is it important for optimizing building performance and energy efficiency. How can the design and layout of lighting panels and switchboards optimize electrical efficiency and safety?	5+5	CO3
Q 8	Discuss the benefits of integrating renewable energy systems into building design, such as reducing reliance on fossil fuels, lowering energy costs, and mitigating environmental impact.	10	CO3
Q 9	Illustrate the different types of lighting fixtures and their applications in various indoor environments. Discuss the use of advanced lighting technologies, such as LED lighting and smart lighting controls, in achieving energy-efficient and visually comfortable lighting solutions.	10	CO4

	<p style="text-align: center;">Or,</p> <p>Explain the concept of passive energy strategies and their role in reducing energy demand through natural means, such as daylighting, natural ventilation, and thermal mass.</p> <p>Discuss the design principles for optimizing daylight penetration in buildings and maximizing the use of natural light while minimizing solar heat gain and glare.</p>		
<p><b>SECTION-C</b> <b>(2Qx20M=40 Marks)</b></p>			
Q 10	<p>An educational campus pursues green building certification to demonstrate its commitment to sustainability and environmental stewardship. Outline the criteria and prerequisites for achieving green building certification, such as LEED (Leadership in Energy and Environmental Design) or BREEAM (Building Research Establishment Environmental Assessment Method) and describe the process of certification application and evaluation. Identify sustainable design features and strategies implemented across various campus buildings, including energy-efficient HVAC systems, low-emission materials, water conservation measures, and green infrastructure. Assess the overall environmental performance and occupant satisfaction of the certified green buildings compared to conventional construction practices.</p>	<b>20</b>	<b>CO4</b>
Q 11	<p>Identify the key challenges and opportunities associated with the widespread adoption and implementation of GRIHA certification in India. Discuss barriers to GRIHA compliance, such as lack of awareness, high upfront costs, and limited technical expertise, as well as strategies to overcome these challenges through stakeholder engagement, capacity building, public-private partnerships, and policy support.</p> <p style="text-align: center;">Or,</p> <p>"Assess the impact of different green building rating systems, such as LEED, BREEAM, and Green Star, on the design, construction, and operation of sustainable buildings. Discuss how these rating systems influence decision-making processes, cost considerations, and environmental performance outcomes. Support your analysis with relevant case studies highlighting successful implementations of each rating system."</p>	<b>20</b>	<b>CO5</b>