



GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY

(AUTONOMOUS)

Accredited by NAAC with 'A' Grade, Accredited by NBA (B.Tech., -ECE, EEE & Mech : 2024-2027

(Approved by AICTE & and UGC, New Delhi & Affiliated to JNTUA, Anantapur.)

3rd Mile, Nellore - Bombay Highway, Gangavaram (V), Kovur (M), S.P.S.R. Nellore Dt, Andhra Pradesh - India. 524 137

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QUESTION BANK (DESCRIPTIVE)

Subject Name with Code	SUSTAINABILITY IN ENGINEERING PRACTICES (23A0151T)
Course & Branch	B. Tech & CSE, EEE, AIML, CS, DS
Year & Semester	III & II
Regulation	RG23

UNIT - I

S. No.	Question	[BT Level] [CO] [Marks]
2 Marks Questions (Short)		
1.	Define sustainability.	L1 CO1 2M
2.	List the pillars of sustainability	L1 CO1 2M
3.	Define Economic sustainability	L1 CO1 2M
4.	Define carbon cycle.	L1 CO1 2M
5.	List the processes of fast carbon cycle	L1 CO1 2M
6.	What is mean by photosynthesis	L2 CO1 2M
7.	Write the core functions of construction materials	L2 CO2 2M
8.	List the major construction materials contributing to CO ₂ emissions.	L2 CO2 2M
9.	Why is steel considered a recyclable material	L2 CO2 2M
10.	Define concrete and steel	L2 CO2 2M
Descriptive Questions (Long)		
11.	Explain the concept of sustainability and its importance in civil engineering.	L2 CO1 10M
12.	Describe the carbon cycle with a neat diagram.	L2 CO1 10M
13.	Discuss the role of construction Materials in detail	L2 CO2 10M
14.	Explain CO ₂ emissions from cement and other materials.	L2 CO2 10M
15.	Explain about concrete and steel in detail	L2 CO2 10M
16.	Write the difference between concrete and steel	L1 CO2 10M

UNIT - II

S. No.	Question	[BT Level] [CO] [Marks]
2 Marks Questions (Short)		
1.	What are low-VOC materials?	L1 CO3 2M
2.	Define indoor air quality (IAQ).	L1 CO3 2M
3.	What is No/Low cement concrete?	L1 CO3 2M
4.	Define recycled aggregate.	L1 CO3 2M
5.	What is durability and why is it important?	L1 CO3 2M
6.	Define GGBS and fly ash.	L1 CO3 2M
7.	What are manufactured aggregates?	L1 CO3 2M
8.	What is Life Cycle Assessment (LCA)?	L1 CO3 2M
9.	Define embodied energy.	L1 CO3 2M
10.	Mention any two waste-based construction materials.	L1 CO3 2M
Descriptive Questions (Long)		
11.	Explain briefly about construction materials in maintaining good indoor air quality.	L2 CO3 10M
12.	Describe No/Low Cement Concrete and its sustainability benefits.	L2 CO3 10M
13.	Explain recycled aggregates & their properties.	L2 CO3 10M
14.	Discuss the need for quality control (QC) in sustainable materials.	L2 CO3 10M
15.	Explain the concept of durability and its role in sustainability.	L2 CO3 10M
16.	What is LCA? Explain stages of life cycle assessment.	L2 CO3 10M



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17.	Write notes on eco-friendly building materials.	L2 CO3 10M
18.	Compare natural aggregates with manufactured aggregates.	L2 CO3 10M
19.	Explain durability-based design approach in sustainable construction.	L2 CO3 10M

UNIT - III

S. No.	Question	[BT Level] [CO][Marks]
2 Marks Questions (Short)		
1.	Define embodied energy.	L1 CO4 2M
2.	What is primary energy?	L1 CO4 2M
3.	Define operational energy.	L1 CO4 2M
4.	What is life cycle energy use?	L1 CO4 2M
5.	Mention examples of high embodied energy materials.	L1 CO4 2M
6.	Name components of embodied energy.	L1 CO4 2M
7.	Define energy payback period.	L1 CO4 2M
8.	What is conditioned building?	L1 CO4 2M
9.	Define thermal mass.	L1 CO4 2M
10.	What is the difference between embodied energy and embodied carbon?	L1 CO4 2M

S.No.	Question	[BT Level] [CO][Marks]
2 Marks Questions (Short)		
11.	Explain the components of embodied energy.	L2 CO4 10M
12.	Describe the procedure for calculating embodied energy of construction materials.	L2 CO4 10M
13.	Distinguish between primary energy, delivered energy, and final energy.	L2 CO4 10M
14.	Explain operational energy in a conditioned building with examples.	L2 CO4 10M
15.	Discuss the relationship between embodied energy and operational energy.	L2 CO4 10M
16.	Explain Life Cycle Energy (LCE) analysis.	L2 CO4 10M
17.	Describe factors influencing embodied energy of materials.	L2 CO4 10M
18.	Calculate embodied energy of a building using given material quantities (cement, steel, bricks, aggregates).	L3 CO4 10M

UNIT - IV

S.No.	Question	[BT Level] [CO][Marks]
2 Marks Questions (Short)		
1.	What is ECBC?	L1 CO5 2M
2.	Define OTTV.	L1 CO5 2M
3.	What is a green building?	L1 CO5 2M
4.	Define U-value.	L1 CO5 2M
5.	What is thermal insulation?	L1 CO5 2M
6.	Mention features of LEED rating system.	L1 CO5 2M
7.	Define TERI-GRIHA.	L1 CO5 2M
8.	What is a Zero Energy Building?	L1 CO5 2M
9.	Define thermal conductivity.	L1 CO5 2M
10.	What is moisture modeling?	L1 CO5 2M
Descriptive Questions (Long)		
11.	Explain various strategies to control energy use in buildings.	L2 CO5 10M
12.	Describe ECBC code and its mandatory requirements.	L2 CO5 10M
13.	Explain OTTV calculation procedure.	L2 CO5 10M



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14.	Discuss LEED rating system in detail.	L2 CO5 10M
15.	Explain TERI-GRIHA rating and its components.	L2 CO5 10M
16.	Write notes on insulation materials and their thermal properties.	L2 CO5 10M
17.	Discuss performance ratings of green buildings.	L2 CO5 10M
18.	Describe the concept of Zero Energy Building with examples.	L2 CO5 10M
19.	Calculate OTTV for a building facade given thermal property.	L3 CO5 10M

UNIT - V

S.No.	Question	[BT Level] [CO] Marks
2 Marks Questions (Short)		
1.	Define non-renewable energy sources.	L1 CO6 2M
2.	List any two environmental impacts of coal mining.	L1 CO6 2M
3.	Define greenhouse gases.	L1 CO6 2M
4.	What is global warming?	L1 CO6 2M
5.	What is acid rain?	L1 CO6 2M
6.	Define nuclear energy.	L1 CO6 2M
7.	What is the greenhouse effect?	L1 CO6 2M
8.	Mention two impacts of temperature rise.	L1 CO6 2M
9.	Define carbon monoxide.	L1 CO6 2M
10.	What is fossil fuel?	L1 CO6 2M
Descriptive Questions (Long)		
11.	Explain major non-renewable energy sources and their environmental impact.	L2 CO6 10M
12.	Describe the greenhouse effect with a neat sketch.	L2 CO6 10M
13.	Explain the causes and effects of global warming.	L2 CO6 10M
14.	Discuss the causes, effects, and control methods of acid rain.	L2 CO6 10M
15.	Explain nuclear energy, advantages, and problems with nuclear waste.	L2 CO6 10M
16.	Describe regional impacts of temperature change.	L2 CO6 10M
17.	Write about global temperature rise and climatic patterns.	L2 CO6 10M

Signature of the Staff:

Signature of Department Academic Committee Member 1:

Signature of Department Academic Committee Member 2:

Signature of Department Academic Committee Member 3: