

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S5 (Minor) Examination November 2025 (2023 Admn)

Course Code: CET 385

Course Name: SUSTAINABILITY ANALYSIS AND DESIGN

Max. Marks: 100

Duration: 3 Hours

PART A

(Answer all questions; each question carries 3 marks)

Marks

- | | | |
|----|---|-----|
| 1 | Explain the relationship between ecology and sustainability. | (3) |
| 2 | Explain renewable and non-renewable resources with examples. | (3) |
| 3 | What is embodied energy of a material? | (3) |
| 4 | What is material flow system? | (3) |
| 5 | Define sustainability metric. | (3) |
| 6 | Explain ecological footprint. | (3) |
| 7 | State the significance of life cycle assessment. | (3) |
| 8 | What is the significance of LCA study in product development? | (3) |
| 9 | Explain the significance of a sustainable design approach in building construction. | (3) |
| 10 | Prepare a short account on sustainable transport. | (3) |

PART B

(Answer one full question from each module, each question carries 14 marks)

Module -1

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|----|---|------|
| 11 | Identify the role of materials in design with an example. | (14) |
| 12 | a) Identify any four engineering materials used as environmental substitutes. | (8) |
| | b) Explain the role of sustainable materials in design. | (6) |

Module -2

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|----|---|------|
| 13 | a) Justify the statement. Reducing embodied energy can significantly reduce the overall environmental impact of the building. | (8) |
| | b) Explain any three energy efficient building material. | (6) |
| 14 | Explore engineering model for material management. | (14) |

Module -3

- 15 a) Enumerate the three groups of sustainable metrics. (9)
b) Impacts of our activities and lifestyles effects different aspects of our environment. Justify the statement. (5)
- 16 Explain the principles of Green Engineering in detail. (14)

Module -4

- 17 List out and explain the various steps involved in LCA. (14)
- 18 a) Explain the four steps involved in life cycle impact assessment study. (8)
b) Explain the checks involved in life cycle interpretation analysis of LCA study. (6)

Module -5

- 19 a) Explain the salient features of sustainable city. (9)
b) Explain the sustainable architectural approaches that can be used in cities. (5)
- 20 “Energy efficiency is inevitable in sustainable design” – Justify the statement. (14)