

CBCS SCHEME

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BETCK205D

Second Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Introduction to Sustainable Engineering

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C
Q.1	a.	Define Sustainable Development. Explain its importance in the context of engineering.	8	L1	CO1
	b.	Discuss the role of engineers in mitigating greenhouse gas emissions in energy and transport sectors.	8	L2	CO1
	c.	Explain the objectives and key provisions of the Paris climate agreement.	4	L2	CO1
OR					
Q.2	a.	Describe the life cycle thinking approach and its role in minimizing environment impact.	10	L2	CO1
	b.	Discuss the factor 4 and factor 10 concepts. How do they contribute sustainable development? Illustrate with case studies.	10	L2	CO1
Module – 2					
Q.3	a.	Explain the methodology conducting an Environmental Impact Assessment (EIA).	10	L1	CO2
	b.	What are the different stages involved in the Strategic Environmental Assessment Process (SEA)? Explain briefly.	10	L2	CO2
OR					
Q.4	a.	Define Sustainable Engineering. Discuss its importance in today's industrial practices.	8	L2	CO2
	b.	Explain green economy and how it differs from conventional economic models.	8	L1	CO2
	c.	Illustrate the triple bottom line concept with an example.	4	L3	CO2
Module – 3					
Q.5	a.	What is Life Cycle Assessment? Why is it important in environmental decision making?	8	L2	CO3
	b.	Mention any three commonly used LCA software tools and their purpose. Explain briefly.	7	L2	CO3
	c.	List the key components of a Life Cycle Inventory (LCI). Explain briefly.	5	L1	CO3

OR

Q.6	a.	Discuss the major steps in a life cycle impact assessment.	6	L2	CO3
	b.	Compare LCA with other environmental assessment tools.	6	L2	CO3
	c.	Describe the influence of methodological choices on the outcome of an LCA.	8	L2	CO3

Module – 4

Q.7	a.	Define Environmental Life Cycle Costing (ELCC). How does it differ from traditional costing?	7	L2	CO4
	b.	Describe the major phases of Life Cycle Sustainability Assessment (LCSA).	7	L2	CO4
	c.	Illustrate with examples how Social Life Cycle Assessment (SLCA) evaluates social impacts.	6	L3	CO4

OR

Q.8	a.	Discuss the methodology of carbon foot printing. Explain with a case study from energy system.	8	L2	CO4
	b.	Briefly describe the use of LCA in evaluating building and the built environment.	6	L2	CO4
	c.	Explain how LCA is applied to the following sectors : i. Chemical and Chemical Production ii. Food and Agriculture.	6	L2	CO4

Module – 5

Q.9	a.	Define engineering problem solving. How is it significant in the context of sustainability?	7	L2	CO5
	b.	Discuss any two real-world challenges where sustainable engineering design is critical.	8	L2	CO5
	c.	Explain the conventional engineering design process. Highlight the shift towards sustainable engineering design with an example.	5	L2	CO5

OR

Q.10	a.	Explain the role of sustainability in electronic engineering product design.	8	L2	CO5
	b.	What are the barriers to implement sustainable procurement in industry? Explain briefly.	8	L2	CO5
	c.	Describe Sustainable Production System with examples.	4	L2	CO5
