O.P.Code: 23CE0153 | R23 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech. III Year II Semester Regular Examinations April-2026
SUSTAINABILITY IN ENGINEERING PRACTICES
(Common to ME, ECE, EEE, CSE, CSIT, CIC, CCC, CAD, CSM & CAI)

Time: 3 Hours **Max. Marks: 70**

PART-A
(Answer all the Questions **10 x 2 = 20** Marks)

1	a	What are the main objectives of social sustainability.	CO1	L2	2M
	b	Mention any two sustainable practices adopted in the energy sector.	CO1	L1	2M
	c	What are Volatile Organic Compounds (VOCs).	CO2	L1	2M
	d	Give one precaution to reduce VOC exposure during adhesive application.	CO2	L1	2M
	e	Convert 1 kWh of electrical energy into mega joules (MJ).	CO3	L2	2M
	f	State the formula for calculating Life Cycle Energy Use of a building.	CO3	L1	2M
	g	List any two major energy uses in buildings.	CO4	L2	2M
	h	State the objectives of ECBC.	CO4	L1	2M
	i	Define renewable energy.	CO5	L1	2M
	j	What is global warming?	CO5	L1	2M

PART-B
(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2		Discuss any five roles of construction materials with suitable examples.	CO1	L2	10M
		OR			
3		Write short notes on the following: i) Sustainability ii) Carbon cycle iii) Role of steel in construction iv) Carbon dioxide emission	CO1	L2	10M

UNIT-II

4		Compare No Cement Concrete and Low Cement Concrete.	CO2	L2	10M
		OR			
5		How does applying QC methods in construction support resource efficiency and reduce future repairs?	CO2	L2	10M

UNIT-III

6		Assuming suitable data, estimate the embodied energy per kilogram of lime when coal is used as the fuel for manufacturing.	CO3	L3	10M
		OR			
7		Explain the use of thermal and electrical energy in cement manufacturing, and calculate the energy required for production.	CO3	L3	10M

UNIT-IV

8	a	Explain the need for control of energy use in buildings.	CO4	L2	5M
	b	Discuss various passive energy control techniques used in buildings.	CO4	L3	5M
		OR			
9	a	Explain LEED rating system and certification levels.	CO4	L2	5M
	b	Differentiate between LEED and GRIHA rating systems.	CO4	L1	5M

UNIT-V

10		Discuss in detail the environmental impacts of non-renewable energy sources such as coal, oil, and natural gas.	CO5	L2	10M
		OR			
11	a	Explain the causes and effects of acid rain.	CO5	L2	5M
	b	Discuss the various preventive measures to control acid rains.	CO5	L3	5M

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