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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

February / March 2024 Semester End Main Examinations

Programme: B.E.

Semester: I / II

Branch: Common to all Branches

Duration: 3 hrs.

Course Code: 22ME1ETISE / 22ME2ETISE

Max Marks: 100

Course: Introduction to Sustainable Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

			UNIT - I			CO	PO	Marks
			1	a)	Discuss the nine planetary scientific framework models that considers the global environmental limits for human development.			
				b)	What do you understand by the term sustainable development? Discuss the major outcomes of Paris agreement – 2015 (COP21).	CO1	PO7 PO9	05
				c)	How do you analyze the circular economy concept for the achievement of sustainable development goals (SDG) and explain with the help of diagram?	CO2	PO7 PO9	05
			OR					
			2	a)	How the different fields of engineering contribute to meet the targets of Sustainable Development Goals? Discuss briefly any 12 Sustainable Development Goals.	CO1 CO2	PO7 PO9	12
				b)	Interpret Factor-4 and Factor-10 key concepts towards sustainable development.	CO2	PO7 PO9	08
			UNIT - II					
			3	a)	What do you think of Environmental Impact Assessment, a site-specific tool used to measure the sustainability? Discuss its key elements involved with the help of a flow diagram.	CO3	PO7 PO9 PO10	10
				b)	How do engineers contribute to Sustainable Consumption Production (SCP) framework, explain in detail with a neat sketch.	CO3	PO7 PO9 PO10	10
			UNIT - III					
			4	a)	Why do you think “Goal and Scope definition” of Life Cycle Assessment is important for sustainable development? Explain with examples.	CO3	PO7 PO9 PO10	10

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

	b)	Compare and interpret the LCIA (Life Cycle Impact Assessment) of Incandescent and Compact Fluorescent lamps.	CO3 PO7 PO9 PO10	06
	c)	List the four stages of Life Cycle Assessment.	CO3 PO7 PO9 PO10	04
		UNIT - IV		
5	a)	What is environmental economics? How do you estimate the total economic value of the ecosystem and explicate the different methodologies?	CO1 CO2 PO9	10
	b)	What do you understand by the term carbon footprint? Explain?	CO1 CO2 PO9	05
	c)	List the five market based incentives or economic instruments for sustainability in order to internalize the external costs?	CO1 CO2 PO9	05
		UNIT - V		
6	a)	What are the key tasks in the sustainable engineering design process that differentiates it from the conventional one?	CO4 PO7 PO9 PO10	10
	b)	Discuss the Design for Sustainability (D4S) strategic wheel with the help of diagram?	CO4 PO7 PO9 PO10	10
		OR		
7	a)	How do you integrate the sustainable process design in the production of polyvinylchloride plastic? Explain.	CO4 PO7 PO9 PO10	10
	b)	Explain the role of engineers across the stages of project delivery.	CO4 PO7 PO9 PO10	10
