U.S.N.										

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

Autonomous Institute Affiliated to VTU

September 2024 Supplementary 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.

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.

		UNIT - I	CO	PO	Marks
1	a)	List and describe the nine planetary boundary (PBs) concepts of recent scientific framework.	CO1	PO1 PO7	**10**
	b)	What are the key attributes of the graduate engineers towards sustainable development.	CO1	PO1 PO7	**10**
		OR			
2	a)	Explain the concept of circular economy with neat diagram.	CO1	PO1 PO7	**10**
	b)	Explain the concept of system and life cycle thinking towards sustainable development.	CO1	PO1 PO7	**10**
		UNIT - II			
3	a)	Explain the basic elements of an Environmental Management System (EMS) with PDCA cycle.	CO1 CO2	PO1 PO7	**10**
	b)	Explain in brief the 7 cleaner production implementation strategies.	CO3	PO1 PO7 PO9	**10**
		UNIT - III			
4	a)	What critical methodological choices, engineers should follow for determining the outcome of Life Cycle Assessment study?	CO3	PO1 PO7 PO9	**10**
	b)	Name the four main phases of a life cycle assessment, according to ISO 14040. Note the content of each phase.	CO3	PO1 PO7 PO9	**10**
		UNIT - IV			
5	a)	What are the six GHG emissions that accounts for and what are their sources?	CO3	PO1 PO7 PO9	**05**

		b)	What is the GHG protocol and distinguish between scopes 1, 2, and 3.	*CO3*	*PO1* *PO7* *PO9*	**05**
		c)	Explain the market-based incentives or economic instruments for sustainability.	*CO3*	*PO1* *PO7* *PO9*	**10**
			UNIT - V			
	6	a)	What are the two types of engineering problem solving methods?	*CO4*	*PO1* *PO7* *PO9*	**05**
		b)	What is conventional engineering design process and what are the 4 Cs of design.	*CO4*	*PO1* *PO7* *PO9*	**05**
		c)	Explain the 12 Principles of green engineering for Sustainable Engineering Design.	*CO4*	*PO1* *PO7* *PO9*	**10**
			OR			
	7	a)	Explain the 7-strategy wheel of design for sustainability.	*CO4*	*PO1* *PO7* *PO9*	**05**
		b)	Explain the design for sustainability strategies, with their sub strategies.	*CO4*	*PO1* *PO7* *PO9*	**05**
		c)	Explain the different methods used to measure sustainability.	*CO4*	*PO1* *PO7* *PO9*	**10**

****