

U.S.N.

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

Autonomous Institute Affiliated to VTU

April 2025 Semester End Make-Up Examinations**Programme: B.E.****Branch: Common to all Branches****Course Code: 22ME1ETISE****Course: Introduction to Sustainable Engineering****Semester: I****Duration: 3 hrs.****Max Marks: 100**

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 briefly explain the 17 Sustainable Goals as per the 70th UN general assembly held on 25th September 2015 under the official agenda “transforming our world: 2030 towards sustainable development”.	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 system and life cycle thinking towards sustainable development.	CO1 CO2	PO1 PO7	10
		b)	Explain the concept of circular economy with a neat diagram.	CO1 CO2	PO1 PO7	10
			UNIT - II			
	3	a)	What are the ten sustainable engineering principles that guide engineering practice.	CO1 CO2	PO1 PO7	10
		b)	Explain green and low carbon economy.	CO1 CO2	PO1 PO7	10
			OR			
	4	a)	Explain the basic elements of an Environmental Management System (EMS) with PDCA cycle.	CO1 CO2	PO1 PO7	10
		b)	Enumerate the EIA process with its key elements and process flowchart	CO1 CO2	PO1 PO7	10

		UNIT - III			
5	a)	What are the methodologies used to determine the outcomes of LCA?	CO2	PO1 PO7	10
	b)	Explain the Life cycle costing and social life cycle assessment.	CO2	PO1 PO7	10
		OR			
6	a)	What are the components of LCA, Explain the same?	CO2	PO1 PO7	08
	b)	What are the strength and limitations of LCA.	CO2	PO1 PO7	08
	c)	List any four LCA and LCA software's are used for assessment?	CO2	PO1 PO7	04
		UNIT - IV			
7	a)	What is carbon foot printing and list out the direct and indirect greenhouse gas emissions (GHG)? And what steps are taken to reduce GHG gases.	CO3	PO7 PO9	10
	b)	Explain the following: i) Environmental product declaration. ii) Energy system.	CO3	PO7 PO9	10
		OR			
8	a)	Explain environmental economics with suitable examples?	CO3	PO7 PO9	10
	b)	Explain the market-based incentives or economic instruments for sustainability.	CO3	PO7 PO9	10
		UNIT - V			
9	a)	Explain the general conventional design process with neat flow chart.	CO4	PO7 PO9	10
	b)	What are the two types of engineering problem solving methods?	CO4	PO7 PO9	10
		OR			
10	a)	What is conventional engineering design process and what are the 4 Cs of design.	CO4	PO7 PO9	10
	b)	Explain the different methods used to measure sustainability.	CO4	PO7 PO9	10
