U.S.N.										

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

Autonomous Institute Affiliated to VTU

May 2023 Semester End Main Examinations

Programme: B.E. **Semester: I**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 22ME1ETISE **Max Marks: 100**
Course: Introduction to Sustainable Engineering **Date: 08.05.2023**

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

MODULE - I

1 a) List the guiding principles of sustainable engineering in the context of environment and society. **10**

b) Discuss, factor 4 and factor 10 with reference to the implementation of sustainability. **10**

OR

2 a) Comment on the need & importance of sustainable engineering for a mixed economy like India. **10**

b) Discuss the need of circular economy and its relevance with a neat sketch and examples for sustainable development of India. **10**

MODULE - II

3 a) Discuss the frame works for sustainable engineering and required decision making tools. **10**

b) Discuss the following with reference to sustainable engineering; **10**
Green economy, low carbon economy, triple bottom line, and eco efficiency

MODULE - III

4 a) Discuss the need, goal, and scope for life cycle assessment. **10**

b) Discuss the following w.r.t LCA; life cycle inventory & life cycle impact assessment. **10**

MODULE - IV

5 a) What is a carbon foot print? Discuss the six GHG emissions it accounts for and their sources. **10**

b) Discuss the following statement: LCA cannot determine if a product is "sustainable" or "environmentally friendly". **10**

MODULE - V

6	a)	Differentiate, conventional to sustainable engineering design process with sufficient examples.	**10**
	b)	Measuring sustainability is crucial. Discuss in detail with the help of strategy wheel for design for sustainability.	**10**

OR

7	a)	Role of engineers across stages of project delivery could have a huge impact on sustainability. Discuss by considering an application.	**10**
	b)	To enable innovation for sustainability, engineers must develop key individual principles. Discuss them briefly.	**10**

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