No. of Printed Pages : 02 **Roll No. .....**

19CC1303

M. Tech. EXAMINATION, 2020

(Third Semester)

(C Scheme) (Main & Re-appear)

(ME)

MEP631C

SUSTAINABLE MANUFACTURING

Time : 2½ *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Four* questions in all. All questions carry equal marks.

1. (a) Define Sustainable Manufacturing (SM). Underline the necessity of manufacturing sustainability.

(b) Briefly discuss the chronology of developments in Manufacturing and indicate the respective enablers that helped in these developments.

2. (a) Name the barriers in implementing Sustainable Manufacturing Practices.

(b) With the help of an example, discuss a methodology to prioritize SM drivers.

3. Briefly discuss the role of the following in manufacturing sustainability :

(a) Design for energy efficiency

(b) Design for material efficiency

(c) Sustainable materials.

4. (a) Differentiate between 3R and 6R.

(b) Discuss the methods to improve the Energy efficiency in machine tools.

5. (a) Using a sample industrial case, illustrate the methodology of environmental impact assessment.

(b) How can life-cycle costing help in sustainability management ?

6. What are the End-of-life strategies for product ? Illustrate with the help of example, how each of these help in Greening the Supply Chain.

7. (a) Name the different Renewable Sources of Energy. Illustrate, how renewable sources of energy relate with sustainability ?

(b) Discuss the necessity of cooperation among Industrial partners for reducing Carbon footprint.

8. (a) Illustrate, how Lean techniques helps in greening the manufacturing systems ?

(b) Discuss the strategies for waste reduction in green manufacturing.

9. (a) How does Dry and Near-dry machining relate with sustainable manufacturing ? Explain.

(b) What are the parameters considered in "Design for Environment" ?

(c) What are the measures of sustainability impact assessment ?

(d) Underline the difference between Dust-to-Dust and Cradle-to-Grave strategy ?

(e) Indicate the role of operations function in manufacturing sustainability.