



INDIAN INSTITUTE OF TECHNOLOGY, KHARAGPUR

Mid-Autumn Semester 2022-23

Date of Examination : _____ Session (FN/AN) _____ Duration 2 hrs

Subject No. : EP 60044

Subject Name : Frugal Engineering

Department/Center/School : Rajendra Mishra School of Engineering Entrepreneurship

Specific charts, graph paper, log book etc., required _____

Special Instructions (if any) : _____

1. Illustrate, with the help of a diagram, the conceptual frugal innovation framework, comprising of 'need-based solutions' and 'frugal engineering' approaches as a building block for reverse innovation. [Marks: 4]
2. a) "Enterprises are challenged, to come up with new value propositions with new ways of thinking in terms of 'Quality' and 'Affordability'; 'Quality' being the fulcrum." – Explain; and
b) Discuss on two examples of Frugally Engineered 'healthcare product/ system. [Marks: 3 + 4]
3. Explicate the 'unique value proposition (UVP)', involving its four salient elements, in the context of frugal innovation. [5]
4. a) Briefly describe the features integral to frugal design (FD) approach, concerning FD Thinking and
b) Elucidate the Principles in Frugal Design in details. [Marks: 3 + 6]
5. Expound the steps of any widely used Design Thinking Model [5]