UPES

End Semester Examination, December 2023

Course : Product Design and Development	Semester: VII
Program : B Tech. Mechanical Engineering	Time : 03 hrs.
Course Code: MECH 4020P	Max. Marks: 100

Instructions: Draw figures and diagrams, wherever required.

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Differentiate technology driven products to user driven products.	4	CO1
Q2	Explain organization and decomposition in product design (PD), what are the benefit of product decomposition?	4	CO2
Q3	Desirable the features of Production Flow Analysis (PFA).	4	CO1
Q4	Explain hype cycle and its various stages of evolution.	4	CO2
Q5	Explain engineering design and its usefulness in modern product development.	4	CO3

SECTION B
(4Qx10M= 40 Marks)

Q 1	Describe the importance of choice of design for X Tools and its uses in the design process.	10	CO3
Q2	Analyze the utilization potential of CAD, CAM and CAE tools used in Industrial design on the basis of various stage of product development.	10	CO1
Q3	Explain relevance of product lifecycle issues comes in designing phase.	10	CO2
Q4	Describe robust design, how it's become one of major selection parameter in design? Categorize and explain robust design parameter. **OR** Analyze your learnings from the product design case study of "Design and development of Sanitizer-soap dispenser" Explain product development stages in steps based on the case study, describe why conducting market survey having importance in new product design?	10	CO4

SECTION-C
(2Qx20M=40 Marks)

Q 1	Define Product Life Cycle (PLC) and state its assessment methodology applied in sustainable product development?	20	CO3
Q2	Discuss importance of product cost estimation and factors considered in manufacturing and assembly costs estimation for new product. **OR** On the basis of case study of "flying car design", explain different steps which must be followed from flying car conceptualization stage to flying car market launch. Also discuss that how modelling and prototyping helps in rapid product development.	20	CO4