



27/12/24 → AN

Roll No.

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B.Tech (Full Time) - END SEMESTER EXAMINATIONS, NOV/DEC 2024

AERONAUTICAL ENGINEERING

ME 3251 – DESIGN THINKING

(Regulations 2023)

Time:3hrs

Max.Marks: 100

CO1	Apply design concepts for manufacturing, assembly and environment.
CO2	Make economically sound decisions.
CO3	Design methodologies on industrial ecology.
CO4	Analyze the design for its manufacturability using modern quality control concepts and Approaches.
CO5	Learn the value of design and how it impacts society, industry, and the environment.

BL – Bloom's Taxonomy Levels

(L1-Remembering, L2-Understanding, L3-Applying, L4-Analysing, L5-Evaluating, L6-Creating)

PART- A(10x2=20Marks)

(Answer all Questions)

Q.No.	Questions	Marks	CO	BL
1	Differentiate ideation and prototype.	2	1	2
2	State the nine criteria of an inspirational design brief.	2	1	1
3	State the challenges in idea generation.	2	2	2
4	How customer's need can be identified?	2	2	2
5	Define product architecture.	2	3	1
6	State the various environmental impacts on design.	2	3	2
7	Define design for recyclability.	2	4	1
8	State the limitations in partial disassembly.	2	4	2
9	Classify costs in design.	2	5	1
10	State the conditions of patentability.	2	5	2

PART- B(5x 13=65Marks)

Q.No.	Questions	Marks	CO	BL
11 (a)	i) Write a short note on 'Nine criteria of an Inspirational Design Brief' with an example. ii) Discuss about visualize, empathize and ideate.	8 5	1	3
OR				
11 (b)	i) Discuss briefly about the various inputs to the customer experience mapping. ii) How to integrate design to Fuzzy Front End? Discuss.	8 5	1	3
OR				
12 (a)	i) Explain the six phases of generic concept development. ii) How to identify customer needs? Brief it with a flow chart.	7 6	2	3
OR				
12 (b)	i) Explain the steps in setting final specifications. ii) Discuss the methods of concept selection and testing.	7 6	2	3
OR				
13 (a)	i) Define modular architecture and briefly discuss about the factors affecting modularity architecture. ii) Give the guidelines for managing platform trade-off.	8 5	3	4



13 (b)	i) Write a short note on design for environment process. ii) How to assess the quality of industrial design. Discuss it.	7 6	3	4
14 (a)	With examples write a short note on i) Design of experiments and ii) Design for X.	7+6	4	3
	OR			
14 (b)	Discuss with examples about i) Failure Mode Effect Analysis and ii) Quality Function Deployment.	7+6	4	3
15 (a)	i) Brief about cost estimation in engineering design. ii) Write a short note on life cycle costs.	7 6	5	4
	OR			
15 (b)	i) Explain the process of drafting and filing a patent application. ii) State the limitations on copyright protection.	8 5	5	4

PART- C(1x 15=15Marks)

(Q.No. 16 is compulsory)

Q.No.	Questions	Marks	CO	BL
16.	Explain the product architecture of a printer considering the schematic flow of the process, cluster elements, geometric layout and their interactions.	15	3	5