



**SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT
STUDIES (AUTONOMOUS)**

QUESTION BANK

Year / Semester: II B. Tech IV Semester

Regulation: R23

Subject and Code: 23ESC241T DESIGN THINKING AND INNOVATION

SYLLABUS

UNIT – I INTRODUCTION TO DESIGN THINKING

Introduction to elements and principles of Design, basics of design-dot, line, shape, form as fundamental design components. Principles of design. Introduction to design thinking, history of Design Thinking, New materials in Industry.

UNIT – II DESIGN THINKING PROCESS

Design thinking process (empathize, analyze, idea & prototype), implementing the process in driving inventions, design thinking in social innovations. Tools of design thinking- person, costumer, journey map, brainstorming, product development

Activity: Every student presents their idea in three minutes, Every student can present design process in the form of flow diagram or flow chart etc. Every student should explain about product development.

UNIT – III INNOVATION

Art of innovation, Difference between innovation and creativity, role of creativity and innovation in organizations- Creativity to Innovation- Teams for innovation- Measuring the impact and value of creativity.

Activity: Debate on innovation and creativity, Flow and planning from idea to innovation, Debate on value-based innovation.

UNIT – IV PRODUCT DESIGN

Problem formation, introduction to product design, Product strategies, Product value, Product planning, product specifications- Innovation towards product design- Case studies.

Activity: Importance of modelling, how to set specifications, Explaining their own product design.

UNIT – V DESIGN THINKING IN BUSINESS PROCESSES

Design Thinking applied in Business & Strategic Innovation, Design Thinking principles that redefine business – Business challenges: Growth, Predictability, Change, Maintaining Relevance, Extreme competition, Standardization. Design thinking to meet corporate needs- Design thinking for Startups- Defining and testing Business Models and Business Cases- Developing & testing prototypes.



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Max Marks: 10

S.No.	CO	Questions	BT
Unit I: INTRODUCTION TO DESIGN THINKING			
1	1	a. Differentiate between shape and form and explain their importance in design? b. Discuss how design thinking helps in creative problem solving?	L2,L4
2	1	Explain the fundamental elements of design and their role in visual composition?	L2
3	1	Define the principles of design and explain any five principles with examples?	L2
4	1	Discuss smart materials, nanomaterials, and biodegradable materials and their industrial applications?	L3,L2
5	1	Explain the human-centered approach in design thinking and its importance in problem solving?	L2,L5
6	1	Describe the importance of new materials in modern industry with examples?	L5,L2
7	1	Explain the history and evolution of Design Thinking from the 1960s to the present?	L4,L2
8	1	a. What is unity and harmony? How do they improve visual appeal? b. Write short notes on geometric and organic shapes?	L5,L2
9	1	Describe dot, line, shape, and form as the basic components of design with suitable examples?	L2
10	1	Describe about balance, contrast, and emphasis and their role in creating effective designs?	L3,L2
11	1	a. Define Design Thinking and explain its five stages? b. Explain form and fundamental design components in form?	L1,L2



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S.No.	CO	Questions	BT
Unit II: DESIGN THINKING PROCESS			
1	2	a. List and briefly explain the stages of the design thinking process. b. Write a short note on prototyping and Ideate?	L1,L2
2	2	Explain the Design Thinking process and describe the stages: empathize, analyze, ideate, and prototype?	L2
3	2	Explain the ideation and prototyping stages and their role in innovation?	L2,L3
4	2	Explain how design thinking helps in driving inventions and innovative product development?	L3,L5
5	2	Describe the role of design thinking in creating user-centered innovations?	L2,L3
6	2	Explain the application of design thinking in social innovation with examples?	L3
7	2	Explain the tools of design thinking such as persona, customer journey map, brainstorming, and product development.	L2
8	2	Discuss the importance of brainstorming and journey mapping in improving user experience?	L5,L3
9	2	Describe the empathize stage and explain how understanding user needs improves solutions?	L2,L5
10	2	Discuss how the design thinking process helps in solving complex real-world problems	L3,L4
11	2	Briefly explain the stages of the design thinking process in social innovation? Give examples.	L2,L3



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S.No.	CO	Questions	BT
Unit III: INNOVATION			
1	3	a. Differentiate between creativity and innovation with suitable examples. b. Explain the relationship between creativity and innovation in problem solving.	L4,L2
2	3	Discuss the key principles that make innovation successful in organizations.	L5
3	3	Discuss the role of creativity and innovation in improving organizational performance.	L4
4	3	Explain the process of transforming creative ideas into innovation.	L2
5	3	What challenges are faced while converting creativity into innovation? Explain.	L4
6	3	Discuss the stages involved in moving from idea generation to implementation.	L2
7	3	Discuss the key principles that make innovation successful in organizations.	L5
8	3	a. Explain the relationship between creativity and innovation in problem solving. b. Why is creativity considered the foundation of innovation?	L2,L4
9	3	Explain the art of innovation and its importance in today's competitive world.	L5
10	3	a. Discuss the characteristics of effective innovation teams. b. How can organizations build and manage teams to foster innovation?	L4,L6
11	3	Explain methods used to measure the impact and value of creativity in organizations	L3



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S.No	CO	Questions	BT
Unit IV: PRODUCT DESIGN			
1	4	a. Describe the stages involved in product development planning b. Explain the role of technology (AI, IoT, automation) in modern product innovation.	L2,L4
2	4	Explain the concept of problem formation and describe the steps involved in defining a problem with examples.	L2
3	4	Describe methods used to understand user needs and convert them into problem statements.	L3
4	4	Define product design and explain its objectives, elements, and stages in the design process.	L2
5	4	What is a product strategy? Explain different product strategies with examples.	L4
6	4	Define product value and explain different types of value delivered to customers.	L2
7	4	Explain the relationship between cost, benefits, and customer perception in determining product value.	L4
8	4	Explain the product planning process and its importance in successful product launch.	L5
9	4	Discuss the role of market research and feasibility analysis in product planning.	L4
10	4	What are product specifications? Explain their importance in product design and development.	L2
11	4	Discuss how design thinking promotes innovation in product development.	L4



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S.No.	CO	Questions	BT
Unit V: DESIGN THINKING IN BUSINESS PROCESSES			
1	5	a. Define design thinking and explain its role in business innovation b. What are the key principles of design thinking?	L1,L2
2	5	Describe the stages of design thinking and their application in business problem solving.	L2,L3
3	5	Explain the core principles of design thinking and how they redefine modern business practices.	L2,L5
4	5	Discuss major business challenges such as growth, predictability, and change, and explain how design thinking helps address them.	L4,L3
5	5	Explain how design thinking helps businesses maintain relevance in rapidly changing markets.	L3,L5
6	5	Explain how startups use design thinking to reduce risk and improve product-market fit.	L3
7	5	Explain how design thinking helps in aligning customer needs with corporate strategy.	L3,L4
8	5	Explain how large corporations use design thinking to improve processes, products, and services.	L3
9	5	Discuss the importance of design thinking for startups in developing customer-centered products.	L5,L3
10	5	Explain how design thinking helps in defining and testing business models.	L3,L4
11	5	Explain the importance of prototyping in design thinking and business innovation.	L2,L5



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Note: L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating

Instruction to Faculty Members:

The Six Levels of Bloom's Taxonomy:

1. **Remembering:** Retrieving, recognizing, and recalling relevant knowledge from long-term memory (e.g., list, define, name, locate).
2. **Understanding:** Constructing meaning, explaining ideas, or concepts (e.g., summarize, interpret, classify, compare).
3. **Applying:** Using information in new situations or implementing procedures to solve problems (e.g., solve, use, demonstrate, implement).
4. **Analyzing:** Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure (e.g., contrast, categorize, distinguish, diagram).
5. **Evaluating:** Making judgments based on criteria and standards through checking and critiquing (e.g., judge, critique, justify, defend, argue).
6. **Creating:** Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure (e.g., design, construct, develop, formulate).