

**Subject with Code: DESIGN THINKING & INNOVATION (23HS0815)** **Course & Branch:** Common to ALL Engineering branches  
**Year& Sem:** II B. Tech & II Sem **Regulation:** R23

## UNIT I

### Introduction to Design Thinking

1	a)	What is Design Thinking?	[2M]
	b)	Name the five stages of the Design Thinking process.	[2M]
	c)	How is Design Thinking different from traditional problem-solving?	[2M]
	d)	Who popularized the concept of Design Thinking?	[2M]
	e)	How does Design Thinking help in product development?	[2M]
2	a)	Explain the primary focus of traditional thinking.	[5M]
	b)	How does it differ from the focus of design thinking?	[5M]
3		Explain the fundamental components of design and their role in visual composition.	[10M]
4		Demonstrate the principles of design such as balance, contrast, emphasis, and movement, with examples	[10M]
5	a)	Illustrate the design thinking process and its application in solving complex problems.	[5M]
	b)	Develop a case study of a successful design thinking project.	[5M]
6	a)	Explain the importance of empathy in design thinking.	[5M]
	b)	In what ways can designers utilize empathy to develop effective user-centered solutions?	[5M]
7		Explain the role of prototyping in design thinking. How can prototyping help designers refine their ideas and create innovative solutions?	[10M]
8		What is Design Thinking, and how does it influence to problem-solving and innovation?	[10M]
9		Interpret IDEO and Stanford d.school played a crucial role in developing the Design Thinking framework.	[10M]
10		Explain the impact of new materials in industrial design and their role in shaping sustainable practices.	[10M]
11		Illustrate the properties and applications of graphene, nanomaterials, and smart materials. How are these materials transforming various industries?	[10M]

## UNIT II

## Design Thinking Process

1	a)	What are the five stages of the Design Thinking process?	[2M]
	b)	Define the Empathize stage in Design Thinking.	[2M]
	c)	Why Define stage is important in problem-solving?	[2M]
	d)	What is the purpose of the Ideate phase?	[2M]
	e)	How does prototyping help in refining an idea?	[2M]
2	a)	List and Construct Five stages of Design Thinking process.	[5M]
	b)	Explain five stages of Design Thinking process with suitable examples.	[5M]
3		Why is the Empathize stage crucial in Design Thinking, and how does it impact the final solution?	[10M]
4		Discuss the role of prototyping and testing in refining an idea during the Design Thinking process.	[10M]
5	a)	List and explain the Design Thinking drive new inventions?	[5M]
	b)	Choose some examples of innovative products developed using this approach.	[5M]
6		Demonstrate the essential steps involved in implementing a structured innovation process within an organization?	[10M]
7		Apply the Design Thinking process to solve social innovation. Provide examples.	[10M]
8		Discuss a real-world case study where Design Thinking was used for a social innovation.	[10M]
9	a)	Illustrate about Personas in design thinking.	[5M]
	b)	Survey the importance of customer journey maps in understanding user experience.	[5M]
10		Explain the role of brainstorming in the design thinking process.	[10M]
11		Assess the effectiveness of design thinking in product development with case studies.	[10M]

### UNIT III

### Innovation

1	a)	What are the key principles of the art of innovation?	[2M]
	b)	How does design thinking contribute to innovation?	[2M]
	c)	What role does risk-taking play in innovation?	[2M]
	d)	Why is customer-centric thinking important in innovation?	[2M]
	e)	Compare creativity and innovation.	[2M]
2	a)	Explain the concept of the art of innovation.	[3M]
	b)	Demonstrate the key principles of art of innovation.	[7M]
3		Evaluate the effectiveness of design thinking in driving innovation across its different stages.	[10M]
4		How do organizations build an innovation-friendly culture? Provide examples.	[10M]
5		Assess the impact of digital transformation on innovation strategies in leading organizations.	[10M]
6	a)	Define creativity and innovation with suitable examples.	[5M]
	b)	Distinguish between creativity and innovation.	[5M]
7	a)	How do organizations transform creative ideas into innovative solutions?	[5M]
	b)	Choose some real world examples of creativity leading to innovation.	[5M]
8		Explain the importance of creativity and innovation in achieving organizational success, with examples.	[10M]
9		Demonstrate the role of collaboration in the creativity and innovation process. Provide examples.	[10M]
10		Assess the effectiveness of different metrics used to measure innovation success within organizations.	[10M]
11		Evaluate the effectiveness of current practices used by companies to measure creativity and innovation outcomes.	[10M]

## UNIT IV

### Product Design

1	a)	What is problem formation in product design?	[2M]
	b)	Define product design and its key components.	[2M]
	c)	What are the different types of product strategies?	[2M]
	d)	How does product value impact a company's success?	[2M]
	e)	What factors influence product planning?	[2M]
2		Describe the steps involved in problem formation and its importance in product design	[10M]
3	a)	State product design and List out the different types of product strategies.	[3M]
	b)	Write the key stages in the product design process.	[7M]
4		Compare and contrast different product strategies used by companies.	[10M]
5		Analyze the role of perceived product value in shaping customer perception and market success.	[10M]
6		Discuss the significance of product planning in ensuring business success.	[10M]
7	a)	Define product specifications and describe their key components.	[5M]
	b)	Explain the importance of product specifications in guiding the design and development process.	[5M]
8	a)	Describe innovation drive product design.	[5M]
	b)	Identify the key challenges in implementing innovation.	[5M]
9		Analyze a case study where innovation transformed a product or industry.	[10M]
10		Describe how sustainability principles can be applied to the design of a common consumer product.	[10M]
11		Assess the effectiveness of various methods used to measure post-launch product success.	[10M]

**UNIT-V**  
**Design Thinking in Business Processes**

1	a)	Define design thinking, and how is it applied in business innovation?	[2M]
	b)	How does design thinking help businesses solve complex problems?	[2M]
	c)	What are the key principles of design thinking that redefine businesses?	[2M]
	d)	Why is empathy important in design thinking for business?	[2M]
	e)	How can businesses use design thinking to create customer-centric products?	[2M]
2	a)	Explain the concept of design thinking	[5M]
	b)	Apply the design thinking process in driving business and strategic innovation.	[5M]
3	a)	What are the key principles of design thinking that redefine businesses and Provide examples?	[6M]
	b)	How companies that have successfully implemented design thinking principles.	[4M]
4	a)	Explain how design thinking helps businesses address growth challenges and improve predictability in their operations.	[6M]
	b)	Discuss how design thinking supports businesses in maintaining relevance and competitive markets.	[4M]
5		Compare and contrast the application of design thinking in large organizations versus startups. How does each benefit from this approach?	[10M]
6		Analyze how design thinking helps businesses navigate extreme competition and adapt to market changes. Provide real-world examples.	[10M]
7		Businesses often struggle with balancing standardization and innovation. Evaluate How does design thinking provide a solution to this challenge?	[10M]
8		Make use of design thinking to define and test business models? Explain the process with case studies.	[10M]
9		Outline the key steps involved in developing and testing a prototype to ensure it meets customer needs and expectations	[10M]
10		Analyze the elements of a business model created through design thinking, using real-world company examples.	[10M]
11		Describe the future of design thinking in business and strategic innovation?	[10M]