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Code No. : 16147 (H) N/O

**VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD**  
*Accredited by NAAC with A++ Grade*

**B.E. VI-Semester Main & Backlog Examinations, May/June-2023**

**Design Thinking (OE-IV)**

Time: 3 hours

Max. Marks: 60

*Note: Answer all questions from Part-A and any FIVE from Part-B*

**Part-A (10 × 2 = 20 Marks)**

Q. No.	Stem of the question	M	L	CO	PO				
1.	What are the deliverables in the Empathize Phase? Mention any two?	2	1	1	10				
2.	<p>Here's a case study of a successful Indian restaurant that implemented design thinking to stand out from its competition:</p> <p>The restaurant is called Social, and it is located in Mumbai, India. It was founded in 2014 by the Impresario Hospitality group. The concept behind Social was to create a space that was not only a restaurant but also a co-working space and a hangout spot for millennials.</p> <p>To achieve this, the Impresario Hospitality group used design thinking to understand the needs and preferences of their target audience. They conducted extensive research and found that millennials wanted a space where they could work, socialize, and have fun. So, they created an environment that incorporated all of these elements.</p> <p>Social's design is a mix of industrial and quirky styles, featuring exposed pipes, raw brick walls, and bright, colorful murals. The space is divided into different zones, each with its own theme, such as the Mad Hatter's Tea Party or a library-inspired lounge. Social also features a dedicated co-working space with high-speed internet, charging stations, and comfortable seating.</p> <p>To attract and engage their target audience, Social also offers a variety of events and activities, such as open-mic nights, stand-up comedy shows, and board game nights. They also have a menu that is specifically designed to cater to the tastes and preferences of millennials, with items like burgers, pizzas, and cocktails.</p> <p>The combination of co-working space, events, and an attractive menu has made Social a popular spot among millennials in Mumbai. It has also expanded to other cities in India, including Bangalore, Delhi, and Pune.</p> <p>How did Impresario Hospitality group use design thinking to create a unique concept that catered to the needs of their target audience?</p>	2	3	1	10				
3.	<p>Match the following</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 50%;">1. What the persona does:</td> <td>A. Job postings that require good communication skills and high aptitude scores.</td> </tr> <tr> <td></td> <td>Other candidates with better</td> </tr> </table>	1. What the persona does:	A. Job postings that require good communication skills and high aptitude scores.		Other candidates with better	2	2	2	3
1. What the persona does:	A. Job postings that require good communication skills and high aptitude scores.								
	Other candidates with better								

	<p>communication and aptitude skills getting selected for jobs. Online courses and resources for improving communication and aptitude skills.</p>							
<p>2. What the persona says:</p>	<p>B. Practices speaking and writing in English on their own. Takes online courses and reads books to improve their communication and aptitude skills. Participates in mock interviews to practice their communication skills and improve their confidence.</p>							
<p>3. What the persona thinks:</p>	<p>C.Feedback from interviewers about their poor communication skills and aptitude scores. Other candidates talking about their successful job placements due to their communication and aptitude skills. Advice from friends and family to work on their communication and aptitude skills.</p>							
<p>4. What the persona sees:</p>	<p>D."I feel demotivated because I've been rejected by multiple companies due to my lack of communication skills in English and poor aptitude scores." "I feel frustrated because I have studied hard and have good technical skills, but I am unable to communicate effectively in English." "I feel scared because I am worried that my career prospects will be limited due to my lack of communication and aptitude skills."</p>							
<p>5. What the persona hears:</p>	<p>E."I wish I had better communication skills in English so that I could present my ideas clearly and confidently." "I wish I had better aptitude skills so that I could perform well in the placement rounds and get a good job." "I wonder if there are any resources or programs that can help me improve my communication and aptitude skills."</p>							

<p>4.</p>	<p>Problem: The sales team is not meeting their monthly targets.</p> <p>Why are we not meeting our monthly sales targets? Because we are not generating enough leads.</p> <p>Why are we not generating enough leads? Because our marketing efforts are not attracting enough attention.</p> <p>Why are our marketing efforts not attracting enough attention? Because we are not targeting the right audience with our messaging.</p> <p>Why are we not targeting the right audience with our messaging? Because we haven't done enough research to understand our target audience.</p> <p>Why haven't we done enough research to understand our target audience? Because we haven't allocated enough resources to market research and analysis.</p> <p>What is the root cause of the problem? Who developed the 5 Whys technique.</p>	<p>2</p>	<p>3</p>	<p>2</p>	<p>3</p>
<p>5.</p>	<p>Here's a persona for a temple visitor:</p> <p>Name: Rajesh Age: 35 Occupation: Software Engineer</p> <p>Background: Rajesh is a devout Hindu who visits temples regularly. He had heard a lot about this particular temple and was excited to visit it. However, his experience was not what he had hoped for. He arrived at the temple at 8 am, but had to wait in line for over 3 hours to get inside. Once he finally got inside, he was pushed around by the crowd and did not get a chance to see the idol of the deity properly. He left the temple feeling frustrated and disappointed.</p> <p>Goals: Rajesh's goal is to have a meaningful and fulfilling spiritual experience when he visits a temple. He wants to be able to see the deity clearly, make offerings and participate in the rituals.</p> <p>Pain points: Rajesh's pain points include the long wait times, overcrowding, and lack of organization. He felt that the temple authorities did not have proper systems in place to manage the crowds and ensure a smooth experience for visitors.</p> <p>Personality: Rajesh is a patient person, but he can get agitated when he feels like his time is being wasted or when he is being treated unfairly. He is open-minded and willing to try new things, but he also values tradition and wants to feel connected to his culture and heritage. He is tech-savvy and appreciates modern solutions that make his life easier.</p> <p>Create an empathy map for the above given Persona?</p>	<p>2</p>	<p>4</p>	<p>3</p>	<p>2</p>

6.	Here's an empathy map for the persona with poor communication skills in English and lacking aptitude skills:	2	3	3	2
	Match the following:				
	What the persona says:	Job postings that require good communication skills and high aptitude scores. Other candidates with better communication and aptitude skills getting selected for jobs. Online courses and resources for improving communication and aptitude skills.			
	What the persona thinks	Feedback from interviewers about their poor communication skills and aptitude scores. Other candidates talking about their successful job placements due to their communication and aptitude skills. Advice from friends and family to work on their communication and aptitude skills.			
	What the persona sees:	Practices speaking and writing in English on their own. Takes online courses and reads books to improve their communication and aptitude skills. Participates in mock interviews to practice their communication skills and improve their confidence.			
	What the persona hears:	"I wish I had better communication skills in English so that I could present my ideas clearly and confidently." "I wish I had better aptitude skills so that I could perform well in the placement rounds and get a good job." "I wonder if there are any resources or programs that can help me improve my communication and aptitude skills."			
	What the persona does:	"I feel demotivated because I've been rejected by multiple companies due to my lack of communication skills in English and poor aptitude scores." "I feel frustrated because I have studied hard and have good technical skills, but I am unable to communicate effectively in English."			

		"I feel scared because I am worried that my career prospects will be limited due to my lack of communication and aptitude skills."					
7.	Brainwriting and mindmapping are two ideation techniques that can be used in a design thinking process. What is the main difference between the two techniques?		2	2	4	3	
8.	What do M and P in SCAMPER stand for?		2	1	4	3	
9.	The Netflix autoplay feature has been perturbing viewers since it was first rolled out in 2015. Even a split-second hover over the TV show or film thumbnail instigates the auto-play of a looped trailer or montage.  This means that if users want to see the details or information of the show they've clicked on or hovered over, they're unable to do so without a loud trailer playing.  Why is this a bad UX design? What would you do if you caught this during the user acceptance testing phase?		2	3	5	5	
10.	How would you ensure that the software meets the requirements and expectations of end users during User Acceptance Testing (UAT)?  Example: During User Acceptance Testing, how would you verify that the registration process on the website accurately captures user information, displays appropriate validation messages for errors, and successfully creates user accounts in the backend database?  Create one based on the problem statement that you and your team have identified?		2	3	3	2	
<b>Part-B (5 × 8 = 40 Marks)</b>							
11. a)	Here's an example solution for running a Temple effectively using Design Thinking: Match the following:		5	2	1	10	
	1. Empathize:	a)Once you have identified the key challenges, brainstorm and ideate potential solutions. These can include, for example, implementing an online booking system to reduce waiting times, introducing more seating arrangements, hiring more staff for maintenance and cleaning, and implementing a regular feedback mechanism to better understand the visitors' needs.					
	2. Define:	b)Create the most promising solutions identified in the previous stage. These can be simple mockups or scaled-down versions of the proposed solutions. For example, you can create a mockup of the online					

	booking system or a scaled-down model of a new seating arrangement.				
3. Ideate:	c) Test the prototypes with a small group of temple visitors and management to get feedback on their effectiveness. Based on the feedback, refine the prototypes and continue testing until you have a solution that works for everyone.				
4. Prototype:	d) Based on the data gathered, define the key problems faced by the temple visitors and the temple management. Some of the key challenges might include long waiting times, inadequate facilities, poor cleanliness, and lack of effective communication.				
5. Test	e) Start by empathizing with the temple visitors, understand their needs and expectations. You can do this by conducting surveys, organizing focus groups, and interviewing the visitors. Also, gather data on the current state of the temple, including its facilities, management, and maintenance.				
<p><b>Implement:</b> Once you have identified the most effective solution, implement it across the temple. This might require training staff, updating the temple's website and communication channels, and implementing new maintenance and cleaning procedures.</p> <p><b>Evaluate:</b> Finally, evaluate the effectiveness of the new solution. This can be done by conducting surveys and feedback sessions with the temple visitors and management. Based on the feedback, continue to refine and improve the solution to ensure that the temple is running effectively and meeting the needs of its visitors.</p>					
b)	<p>Fill in the blanks appropriately:</p> <ol style="list-style-type: none"> <li>_____ is the first phase of Design Thinking where the focus is on gaining an understanding of the problem, user needs, and constraints.</li> <li>In the _____ phase of Design Thinking, the aim is to generate a wide range of ideas and potential solutions to the problem at hand.</li> <li>During the _____ phase of Design Thinking, the design team will create one or more representations of their ideas in order to better understand and communicate them to others.</li> </ol>	3	2	1	10

<p>12. a)</p> <p>Here's a persona for an EdTech company that trains students in Java and offers placement support:</p> <p>Name: Rahul Singh Age: 22 Education: Bachelor's degree in Mechanical Engineering Job search status: Unemployed for the past four months after not getting placed in college campus drives Goal: To get a job in the IT industry and start a career in software development Challenge: Lack of formal education and training in programming languages like Java, which are in high demand in the job market Motivation: To gain the skills and knowledge needed to succeed in the IT industry and build a successful career Values: Hard work, dedication, and the desire to continuously learn and improve Personality: Curious, persistent, and goal-oriented Media and communication preferences: Active on social media platforms like LinkedIn and Twitter, prefers emails and chat communication Level of technical expertise: Has some basic knowledge of computer programming but no formal training in Java or other programming languages Learning style: Prefers interactive and hands-on learning experiences, enjoys working in a group setting to share ideas and learn from peers Career aspirations: To start as a software developer and eventually move up to a leadership role in the IT industry</p> <p>Create an empathy map for the above given Persona - Rahul Singh</p>		5	4	2	3
<p>b)</p> <p>During the Empathize phase, some questions that we can ask Rahul to gain a better understanding of his needs and challenges are:</p> <p>Can you tell us more about your past experiences with programming and Java? How important is it for you to land a job in the IT industry? Why?</p> <p>Create three more on your own.</p>		3	3	2	3
<p>13. a)</p> <p>"Design a system to streamline the online shopping experience for customers."</p> <p>What are the various touchpoints that a customer interacts with during their online shopping journey, from the initial search to the final purchase?</p>		5	3	2	3
<p>b)</p> <p>"What are the different social, cultural, and environmental factors that may impact the adoption and usage of our proposed solution for the problem statement of reducing food waste in households?"</p>		3	4	2	3
<p>14. a)</p> <p>Here are a set of ideas to increase class participation and interaction. Create an affinity map for ideas generated during the Brainstorming sessions done at the college.</p>		4	4	4	3

1. Gamify class participation by creating a points-based system where students can earn rewards for actively engaging in discussions and asking questions.
2. Assign group projects that require collaboration and teamwork to encourage interaction and engagement among classmates.
3. Incorporate interactive technologies such as polling tools or chat rooms to create real-time conversations and feedback during lectures.
4. Introduce case studies that students can analyze and discuss in groups, encouraging them to share ideas and opinions.
5. Assign online discussions or forums outside of class where students can engage in discussion and debate related to class material.
6. Encourage peer feedback and critique of presentations or projects to increase student engagement and accountability.
7. Use icebreaker activities or games to build rapport and increase comfort levels among students, which can lead to more participation.
8. Set clear expectations for participation and make it part of the grading criteria to motivate students to engage.
9. Provide frequent opportunities for hands-on learning, such as labs or workshops, to encourage active participation and problem-solving.
10. Have students present their own research or projects related to class material to encourage personal investment and creativity.
11. Incorporate small group discussions or think-pair-share activities to encourage students to share and exchange ideas.
12. Assign reflection activities to encourage students to think critically about class material and apply it to their own experiences.
13. Provide opportunities for students to present their ideas to the class, either formally or informally, to encourage discussion and feedback.
14. Use online whiteboards or collaborative document editing tools to encourage real-time brainstorming and idea-sharing during class.
15. Incorporate multimedia content such as videos or podcasts to engage students with a variety of learning styles and create opportunities for discussion and analysis.

- b) Problem statement: Develop a mobile app for meal planning and grocery shopping.
- Idea 1: The app suggests meals based on user preferences and creates a shopping list accordingly.
- Idea 2: The app includes a feature for tracking calorie and nutrient intake.
- Idea 3: The app allows users to scan barcodes of items in their pantry and suggests meals based on what they already have.
- Idea 4: The app integrates with grocery store loyalty programs and offers discounts on recommended products.
- Evaluation Criteria:
- Feasibility: Can the idea be realistically implemented?
- User Value: Will the idea solve the user's problem and add value to their life?
- Business Value: Will the idea generate revenue and be profitable?
- Competition: Is the idea unique and different from existing solutions?

4 4 4 3



	User Experience: Will the idea provide a positive and seamless user experience? Based on the evaluation criteria evaluate each idea and decide which one would be the best to implement. Write your reasoning.				
15. a)	For a language learning app, how can we use Wizard of Oz prototyping to test the effectiveness of a voice recognition feature before actually building it? Two probable solutions are given, create three on your own  Wizard of Oz prototyping can be used to test the effectiveness of a voice recognition feature in a language learning app by simulating the feature through human intervention. Here's how it can be done:  Create a script with sample phrases that the user would speak to the app for practicing pronunciation.  Recruit a team of testers who would act as the "voice recognition feature" by listening to the user's spoken phrases and providing feedback.	3	4	5	5
b)	Create a storyboard prototype for the problem statement that you and your team have identified?	5	5	5	5
16. a)	What will design thinking help you to compete in?	4	3	1	10
b)	Here's a basic template for creating a persona:  Persona Name:  Demographics: Age, Gender, Marital status, Occupation, Income, Location  Background: Education, Work Experience, Career Goals, Interests, Hobbies  Goals: What are their primary goals and objectives?  Challenges: What are their biggest challenges or pain points?  Values/Beliefs: What are their values and beliefs?  Influences: What factors influence their decision-making?  Behaviors: What actions do they take, and how do they typically interact with products, services, or brands?  User Story: A brief narrative that describes how the persona interacts with your product or service.  Use this template and create a persona for the problem statement you and your team have identified.	4	4	2	3
17.	Answer any <i>two</i> of the following:				
a)	Here is an example of a design debrief, using that as a reference point to create a design debrief for the problem statement that your team and you have identified?  EXAMPLE OF DESIGN BRIEF User perception / feedback	4	4	3	2

	<ul style="list-style-type: none"> <li>• Darryl needs a fast and efficient way to track his health and fitness</li> <li>• He runs/swims often and does not like to carry a phone while running/swimming</li> </ul> <p>Problem statement The user could not track his fitness and health while running/swimming</p> <p>Design goal / objective How may we design a convenient and hands-free fitness and health tracking device for running/swimming?</p> <p>Design requirements Our product/service should ...</p> <ul style="list-style-type: none"> <li>• Track fitness and health while doing an activity</li> <li>• Lightweight • Waterproof / Sweatproof</li> <li>• Impact proof</li> <li>• Convenient to use / Handsfree</li> </ul> <p>NOTES</p>					
b)	<p>Problem statement: Develop a mobile app for meal planning and grocery shopping.</p> <p>Idea 1: The app suggests meals based on user preferences and creates a shopping list accordingly.</p> <p>Idea 2: The app includes a feature for tracking calorie and nutrient intake.</p> <p>Idea 3: The app allows users to scan barcodes of items in their pantry and suggests meals based on what they already have.</p> <p>Idea 4: The app integrates with grocery store loyalty programs and offers discounts on recommended products.</p> <p>Evaluation Criteria:</p> <p>Feasibility: Can the idea be realistically implemented?</p> <p>User Value: Will the idea solve the user's problem and add value to their life?</p> <p>Business Value: Will the idea generate revenue and be profitable?</p> <p>Competition: Is the idea unique and different from existing solutions?</p> <p>User Experience: Will the idea provide a positive and seamless user experience?</p> <p>Based on the evaluation criteria decide which is the best idea . Give your reasoning.</p>	4	4	5	5	
c)	<p>Here are four badly written validation statements for a login page correct them to make it user friendly?</p> <ol style="list-style-type: none"> <li>1. "Invalid login. Please try again or contact support."</li> <li>2. "Error. Username and password not recognized."</li> <li>3. "Login failed. Please enter correct credentials."</li> <li>4. "Authentication failed. Access denied."</li> </ol>	4	3	5	5	

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level - 1	20%
ii)	Blooms Taxonomy Level - 2	40%
iii)	Blooms Taxonomy Level - 3 & 4	40%

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