Hall Ticket Number:

Code No. : 16136 AS (J)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD
Accredited by NAAC with A++ Grade
B.E. VI-Semester Advanced Supplementary Examinations, August-2022
Design Thinking (OE-IV)

Time: **3 hours**   Max. Marks: **60**
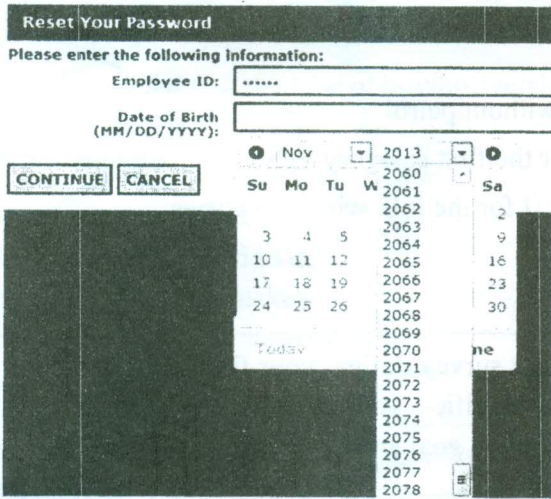
*Note: Answer all questions from **Part-A** and any **FIVE** from **Part-B***

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Design Thinking is extremely useful in tackling problems that are _____ or _____, by re-framing the problem in human-centric ways, creating many ideas in brainstorming sessions, and adopting a hands-on approach in prototyping and testing. 1. Well defined, unknown 2. Known, not defined appropriately 3. ill-defined or unknown 4. Serious and critical problems	2	2	1	10
2.	Given below are the activities and tools that are used in the empathize phase. What are the deliverables of this phase? 	Empathize	User Interview, Informal Chats, Observation, Shadowing, Mystery Shopping, Picture-taking, Immersion	Interview Checklist, Observation Checklist, Writing Tools, Flipcharts and Paper, Camera			2	4	1	10
3.	"If you want to build a product that's relevant to people, you need to put yourself in their shoes." — Jack Dorsey, Programmer, entrepreneur, co-founder of Twitter & founder of Square Play Let's get started! 1. What is empathy and why is it so important? 2. Where does empathy fit into the Design Thinking process?	2	3	2	3
4.	WHY DO YOU NEED TO ASK THE RIGHT QUESTIONS? Effective questions help you: 1. Empathize your end-users and stakeholders 2. Connect and collaborate with more aligned objectives 3. Gather better information 4. Examine and define the problem more effectively 5. Increase your persuasion and influence 6. All of the above	2	2	2	3

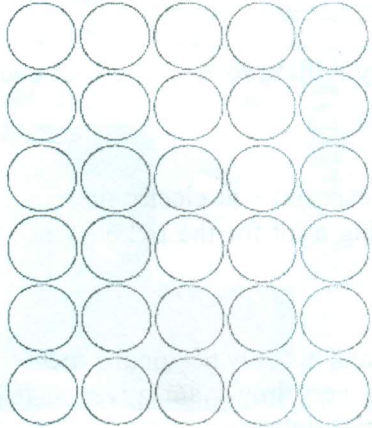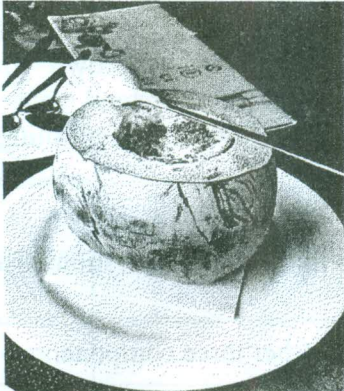|					
	What do we want them to DO? The idea here is to unpack the goal of this persona. What do they need or want to do? And how does one measure if this decision was right after it happened? You may also want to understand a specific type of buying decision. Here are some questions that you would ask yourself: 1. What do they need to do differently? 2. Who is the person we want to meet? 3. What tasks do they want or need to do? 4. What decision do they need to make? 5. How will we know if they have succeeded? There is one irrelevant question which one is it?				
5.	The Salience Model stakeholder mapping model uses three parameters to group stakeholders. The parameters are power, urgency, and legitimacy. Match the following: 	1. Power	A. the stakeholder's expectation for quick responses to their needs or requests.
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2. Urgency	B. the stakeholder's right to be involved. This is also the relationship of the stakeholder to the firm.
3. Legitimacy	C. the stakeholder's ability to influence the outcome of a deliverable, project, or organization.		2	2	3	2
6.	Which phase of the customer's journey will these questions be asked? • What is motivating them to learn more about you? • What actions did the prospect take? • What are their touchpoints?	2	2	3	2
7.	Your team is brainstorming on the topic Favorite Drivers program, which would reward top drivers financially. Here, all the Post-its have been placed on the whiteboard. You want ideas to be grouped together under three categories. Once you've created a group, draw a circle around it and give it a name	2	3	4	3

8.	**What If** is a brainstorming technique that pushes the boundaries of constraints or limitations over a concept/existing product. It follows the Principal in asking new questions if you want new answers.	2	4	4	3

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    1. Scarcity/Abundance

Question: What if the car can run without petrol.

A sample has been given to you for the first category 1) Scarcity/Abundance.

Create 1 question each using What if for the following categories.

    2. Extreme Simplicity

    3. Opposite

9. Before you even begin thinking about survey design, your first step should always be to define a goal. You've got to get specific—your goal can change virtually every characteristic of your test. A good survey goal answers 3 main questions:

- What type of responses do I want?
- What type of data am I hoping to get?
- How will I use that data once I get it?

Take a look at the designs below. Your goal for a concept test on them can't just be "are they good?" You need something specific that answers the three questions above.

A Vague goal:

I want to get feedback on these two designs

Write a specific goal:

_____

(Question 9 marks: 2 4 5 5)

10. What do you make of this "Futuristic design"? You find this when you do your user acceptance testing. Write your opinion on how to make it user friendly. | 2 | 2 | 5 | 5 |

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Part-B (5 × 8 = 40 Marks)

11. a) Defining the challenge often begins by noticing problems. | 5 | 4 | 1 | 10 |

Sometimes it comes out as wishes ("I really wish we had...")

Sometimes it comes out as complaints ("It annoys me that we're not...")

Either starting point is fine.

I really wish we had…

It annoys me that we're not…

Problems we see:

Select a problem from above to be your design challenge: Write it down

My dreams	My concerns

Now let's turn this into a How Might We Challenge (HMW) Question:

How might we design a

_____that_____

__ for ?

b) What will design thinking help you to compete in? Answer in about 50 to75 words. | 3 | 2 | 1 | 10 |

12. a) Case Study | 4 | 4 | 2 | 3 |

Below, see a practical example of a fictitious Empathy Map of a persona developed for e-commerce focused on hair and beard cosmetics for men.

Name Peter Wilson

Age: 28 years old

		Peter is from San Francisco. He is an engineer, recently graduated from Florida State University, and is already working in his field. He values his time at the university very much, not only for his studies but also for the friendships he made and the experiences he lived. His lifestyle is busy, and he is constantly willing to work hard at everything that comes his way. Peter is always up for a good night out, especially at electronic music parties and nightclubs. He doesn't worry about paying a lot for the tickets since he likes the more selected events. Peter is still single, lives with his parents, and his only personal expense is his newly purchased car. He treats it as something very important, given that he drives it everywhere and sees it as a symbol of social status. He is pretty vain and cares a lot about his appearance. His style is more traditional, and he does not like to take risks when it comes to dressing. He goes to the barber every 15 days. What does Peter think and feel? Write three to four points on how he thinks and feels.				
	b)	You have a new mission and an interesting fitness tracker for your mother as a gift for Mother's day —instead of thinking of ideas on your own with Wearable Technology- go through the Empathize Phase to understand your user - Your Mother! Design a Wearable Technology that is useful and meaningful for your mother. What questions would you ask your mother? Write three questions that you would ask her?.	4	3	2	3
13. a)		Given below is a user's feedback. Create the other three components of the Design Brief User perception/feedback Here's feedback from Sandy a young sales manager. "I want to cook but simply can't, Don't know where to start" "I know it's unhealthy, but it's the only option I got." "I wish I could do that! Maybe some assistance is needed." 1. Problem statement 2. Design goal / objective 3. Design requirements	4	5	3	2

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		"I wish I could do that! Maybe some assistance is needed."
		
		   1. Problem statement
		   2. Design goal / objective
		   3. Design requirements
			4	5	3	2

b)	What is an opportunity map? What does it accomplish?	4	1	3	2	

14. a)

30 CIRCLES CHALLENGE

4	4	4	2

Draw recognizable objects in as many circles as possible. That could be a pizza, clock, apple, etc. Set the timer for 3 minutes.

b)	Use the SCAMPER Technique – Reduce, Reuse, Recycle... or Reinvent. An Example	4	3	4	2	

15. a) Example Storyboard

4	4	5	5

1. Harry wants a faster way to get around.
2. First he makes the parts for a jet pack he can wear on his back.
3. He screws them together with his friend Will and they fill it up with the magic formula.
4. Finally Harry straps it on his back and fires it up – It works! Yay!

Prototyping

1. Draft a solution prototype description like the one given above
2. Sketch a picture of your prototype model:

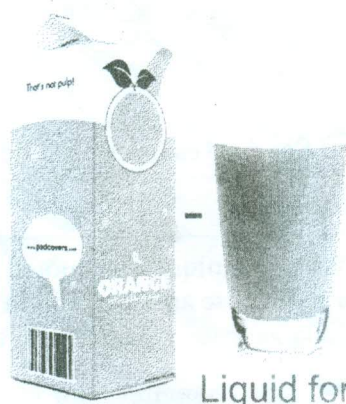|						
b)	Now it is time to test the prototype Example Test: A library was about to implement a glass-walled quiet room. Instead of spending thousands of dollars to build the idea, the library tested the idea by sectioning off the proposed space with tape and visibly marking it a quiet zone. This allowed the library to conduct a low-cost and quick scaled test to see if their idea would be practical prior to spending money on full-scale construction. 2. What assumptions need to be tested? A. Write down the Test activities. B Set the Test success criteria.	4	4	5	5
16. a)	Why do we need Design Thinking? Mention 3 factors?	4	1	1	10
b)	#1 – Taiichi Ohno, the creator of the 5-Why technique, is quoted using the following example to teach using 5-Why's for root cause analysis: Fill in the blanks by asking the appropriate questions. "Why did the robot stop?" The circuit has overloaded, causing a fuse to blow. "_____?" There was insufficient lubrication on the bearings, so they locked up. "_____?" The oil pump on the robot is not circulating sufficient oil. "_____?" The pump intake is clogged with metal shavings. "_____?" Because there is no filter on the pump. What do you think? Is _____ a root cause? Yes…	4	3	1	3
17.	Answer any *two* of the following:				
a)	Imagine that you are designing a new experience of going through the TSA checkpoint at the airport. Your moments along the top of this user journey map might be: Pack for Trip—Travel to Airport—Arrive at Airport—Find Security Line—Show ID to TSA—Go through Security—Find Gate—Arrive at Destination. Design similar touch points for the problem statement that your team has identified?	4	4	3	2
b)	The best way to get a good idea for your problem is to generate multiple ideas as much as you can	4	3	4	3

	SUBSTITUTE				
	Substitute is a technique of replacing something with another thing.				
	We can substitute things, places, people, materials. processes and emotions.				
	What shape can be substituted?				
	What form can be substituted?				
	That's not pulp! ORANGE Liquid form				
c)	Make a questionnaire to collect feedback on your design project. What specific answers would you want your users/ evaluators to give you?	4	4	5	5
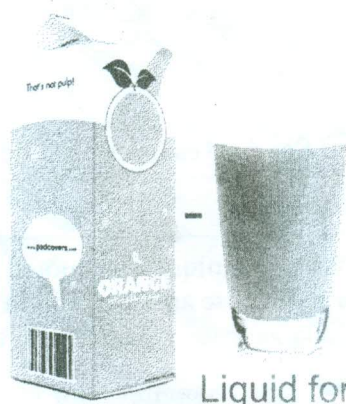
M : Marks;   L: Bloom's Taxonomy Level;   CO; Course Outcome;   PO: Programme Outcome

i)	Blooms Taxonomy Level – 1 & 2	40%
ii)	Blooms Taxonomy Level – 3 & 4	60%

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