No. of pages: 2

Roll. No.: .....

Name: .....

# GOVT. COLLEGE OF ENGINEERING KANNUR

## Department of Electronics and Communication Engineering

Third Semester First Series Examination November 2022 (2019 Scheme)

## EST 200 Design and Engineering

Max. Marks: 50

Duration: 1.5 Hours

### PART A

**Answer all questions. Each question Carries 3 marks**

1. With an example, explain what is meant by a "function-means tree" (3)
2. List out any three constraints for the problem of designing a lunch box (3)
3. Explain a "Pairwise comparison Chart". Where is it used in the design process? (3)
4. Distinguish between objectives and functions in the context of engineering design. Give one example for both. (3)
5. Define Design-thinking. What are its core features? (3)

### PART B

**Answer One full question from each Group**

***GROUP 1***

6. Design two alternative designs for a chair suitable for a five-year-old child, and then narrow them down to the best design based on objectives and constraints. Use hand sketches to illustrate both designs. (14)

OR

7. Explain the process for designing a handbag for women of 15 to 25 years age group, passing through various phases of design. Use hand sketches to illustrate your ideas. (14)

***GROUP 2***

8. Describe the process of designing a coffee mug passing through various phases of the design process. Use hand sketches wherever applicable. (14)

OR

9. List the customer requirements for designing a website for an educational institution. Show how the design objectives were finalized considering the design constraints. Sketch a layout of the final design of the website. (14)

PTO

## *GROUP 3*

10. What is meant by an "empathy map"? Draw an example. (7)

OR

11. With an example, illustrate how a "why-how ladder" helps to identify the needs of users. (7)

---

**Course Outcomes (COs)**

| CO Number | Description | Questions |
|---|---|---|
| EST 200.CO1 | Explain the different concepts and principles involved in design engineering | 1, 2, 3, 4 |
| EST 200.CO2 | Apply design thinking while learning and practicing engineering | 5, 10, 11 |
| EST 200.CO3 | Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering | 6, 7, 8, 9 |