



Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Fourth Semester B.Tech Degree Examination July 2021 (2019 Scheme)

**Course Code: EST200****Course Name: DESIGN AND ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A***Answer all questions. Each question carries 3 marks*

Marks

- 1 Outline the significance of understanding customer requirements in design process (3)
- 2 Describe any three constraints that can occur in design process of a lunch box (3)
- 3 Explain convergent questioning in design thinking (3)
- 4 Explain how conflict in team environment helps in better design of products (3)
- 5 Describe how prototyping helps in design process (3)
- 6 Explain any three advantages of communicating designs in writing. (3)
- 7 Illustrate advantages of reverse engineering in design (3)
- 8 Explain bio mimicry in design with an example (3)
- 9 Describe ethics to be followed in engineering design (3)
- 10 Explain the significance of sustainability in engineering design (3)

**PART B***Answer any one full question from each module. Each question carries 14 marks***Module 1**

- 11 Explain the design process through designing a handbag for women of age group of 15 to 25 years. Use hand sketches to support your idea (14)
- 12 Describe the concept of generating design alternatives and choosing a design through designing a coffee mug with the help of sketches (14)

**Module 2**

- 13 Illustrate the design thinking process through designing a walking stick for elderly people. (14)
- 14 Design a parachute mechanism for safe landing an egg which is dropped from a height of 3 meters using iterative design thinking process with the help of sketches (14)

**Module 3**

- 15 Design an office chair and communicate your design using sketches with design detailing, material selection, scale drawings and dimensions (14)
- 16 Describe the role of mathematical modelling in design engineering citing an example (14)

**Module 4**

- 17 Illustrate modular design approach for designing of desktop computers (14)
- 18 Demonstrate the concept of ergonomics through design of a table lamp (14)

**Module 5**

- 19 Illustrate the changes in design of disposable tea cup in terms of production, use and sustainability (14)
- 20 Describe the how to estimate the cost of a table in design stage? Show how economics will influence the engineering designs. (14)

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