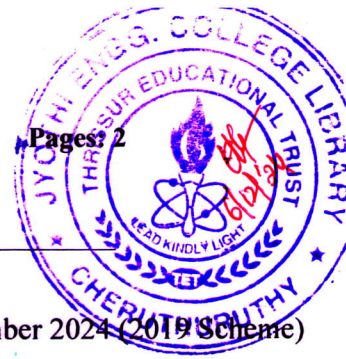


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Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S3 (R,S)/S3 (WP) (R,S)/S3 (PT)(S,FE)/S1 (PT)(S,FE) Examination November 2024 (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 List the possible design objectives and constraints to be considered while designing a coffee vending machine. (3)
- 2 Illustrate the process of detailing the customer requirement while designing a school bag? (3)
- 3 Classify the stages of design thinking process in convergent divergent modes. (3)
- 4 State the pros and cons of low fidelity and high fidelity prototyping. (3)
- 5 State the characteristics and objectives of technical communication. (3)
- 6 Distinguish between layout drawings and detailed drawings. (3)
- 7 What are the uses and limitations of modular design? (3)
- 8 Explain life cycle design approach. (3)
- 9 Write down the expected outcomes of design for manufacturing. (3)
- 10 Explain the significance of time value of money in design. (3)

PART B

Answer any one full question from each module. Each question carries 14 marks

Module 1

- 11 Show the designing of a walking stick for blind people describing the stages of the design process. Use hand sketches to illustrate the process. (14)
- 12 Sketch three design alternatives for a shopping trolley. Narrow down and select the optimum design citing the objectives and constraints. Show its functional structure. (14)

Module 2

- 13 Explain the stages of design thinking process through designing a height adjustable study table for use of children in the age group of 10 to 15 years. Use hand sketches. (14)
- 14 Blood donors often complain that they get pain and injury due to wrong identification of vein. Empathize about this design problem and arrive at a solution using the design thinking process. Illustrate the solution using sketches. (14)

Module 3

- 15 Graphically communicate the new design of a tricycle for kids in the age group of 5 years. Draw the detailed drawings of the same with design detailing, material selection, scale drawings and dimensions. Use only hand sketches. (14)
- 16 Prepare a detailed technical report for a newly designed ironing board, to communicate to a client. (14)

Module 4

- 17 Establish the concept of ergonomics and aesthetics through design of a folding chair. (14)
- 18 Show the development of a nature-inspired design for a kettle. Using hand sketches show the relationship between natural and man-made designs. (14)

Module 5

- 19 Illustrate the changes in design of a solar powered table lamp in terms of production, use, and sustainability with the help of sketch. (14)
- 20 Illustrate the changes made in the design of environmental friendly toys in terms of production. Detail a method to optimise the costs involved. (14)
