Reg No.:_____ 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)

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