

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY****Scheme for Valuation/Answer Key***Scheme of evaluation (marks in brackets) and answers of problems/key***Third Semester B.Tech Degree (R) Examination December 2020 (2019 scheme)****Course Code: EST200****Course Name: Design and Engineering**

Max. Marks: 100

Duration: 3 Hour

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

1. Design Constraints- Minimum three logically correct points(1 mark each) (3)
2. Best feasible design selection from design alternatives using an example. Credit may be given to all logically correct examples (3)
3. Design thinking process in team environment - Minimum three points, Credit may be given to all logically correct examples (3)
4. Explanation using any three stages of design thinking approach. Credit may be given to all logically correct examples (3)
5. Importance of mathematical modelling- Minimum three points (Or explanation using a model or suitable equations.) Credit may be given to all logically correct examples. (3)
6. Documentation of design process and communication- Minimum three points. Credit may be given to all logically correct examples (3)
7. Explanation with example (Or minimum three points about value of engineering). Credit may be given to all logically correct examples (3)
8. Bio mimicking design- explanation with examples (Minimum 2 examples) Credit may be given to all logically correct examples (3)
9. Explanation about Labour, material and overhead cost. Credit may be given to all logically correct examples (3)
10. Role of ethics in engineering design- Minimum three points. Credit may be given to all logically correct examples (3)



PART B

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

MODULE 1

11. Identify Design function, Design constraints – 2 marks each, Figures – 4 marks x 2, justification of choosing the best design -2 marks (14)
12. Objectives -1mark, functions -2 marks and constraints – 2 marks, explanation of design process - 4 marks, Figure – 5 marks (14)

MODULE 2

13. Explanation of various design thinking stages – 9 marks (Credit may be given to all logically correct statements to explain various stages in design thinking- empathise, define, ideate, prototype and test), Figure – 5 marks (14)
14. Empathize about this design problem (Credit may be given to all logically correct issues in wearing masks) – 4 marks, Explanation of solution - 5 marks, Figure – 5 marks (14)

MODULE 3

15. Explanation – 6 marks, Figure – 5 marks, design detailing, scale drawings and dimensions – 3 marks. Credit may be given to all logically correct examples (14)
16. Technical report – 9 marks. (Requirement identification- 3marks, logical grouping -3 marks, aesthetic presentation- 3 marks). Credit may be given to all logically correct choices of tabs and scrolls, Figure – 5 marks (14)

Module 4

17. Explanation – 9 marks (Requirement identification- 3marks, value addition in cost -3 marks, ergonomic features- 3 marks). Credit may be given to all logically correct choices, Figure – 5 marks (14)
18. Explanation – 9 marks, (Requirement identification- 3marks, logical grouping -3 marks, ergonomic features- 3 marks). Credit may be given to all logically correct choices, Figure – 5 marks (14)

MODULE 5

19. Explanation – 9 marks (Requirement identification- 3marks, logical solution -3 marks, feasible circuitry- 3 marks). Credit may be given to all logically correct choices, Figure – 5 marks (14)
20. Identification of parts and its cost – 6 marks, Choice of economical design by choosing different ideas – 3 marks, Credit may be given to all logically correct choices, Figure – 5 marks (14)