

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
SECOND SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2018

**Course Code: BE102**

**Course Name: DESIGN AND ENGINEERING**

Max. Marks: 50

Duration: 2 Hours

**Instructions:** *This is an open book examination and the students are permitted to use maximum of 4 text books, class notes, own notes, earlier assignments; but access to mobile phone and internet is not allowed. Exchange of text books/notes not permitted.*

**PART A**

*Answer any 6 questions, each carries 5 marks*

- 1 You are asked to design a water bottle for primary school children. Describe the design objectives, constraints and functions in the design process. (5)
- 2 Prepare a questionnaire for market survey that you propose to do for a modified design for a pen stand. (5)
- 3 Describe the factors to be considered for the material selection in the design of an umbrella. (5)
- 4 Describe the role of prototyping in engineering the design of a car. (5)
- 5 'Design for recycling is the need of the hour'. Illustrate the concept. (5)
- 6 Differentiate between product centred and user centred designs in the case of a website. (5)
- 7 Identify the different modules inside an automobile. (5)
- 8 How does standardization of components improve designs? List out some standard components in a bicycle and draw any two of them. (5)

**PART B**

*Answer any two full questions, each carries 10 marks*

- 9 a) Mention any three limitations of the sleeper class coaches of the Indian Railways. Modify the design of coaches to rectify these issues. (6)  
b) You are planning to ride a bicycle by connecting a motor with it. Prepare a design drawing for it. (4)
- 10 a) In certain situations, users require extra length for their mobile charger cable. But (6)

offering extra cable length becomes an issue while normal usage. Develop a design to effectively solve this problem. Also give the objectives and constraints of your design.

- b) Implement value engineering concepts to solve the food waste problems in hotels and restaurants. (4)
- 11 a) Design a study table for school children on the basis of design for (i) Manufacture (ii) Assembly and disassembly (iii) Safety? (6)
- b) Describe the role of colours in the design of any two products. (4)

\*\*\*\*