

Reg No.: _____

Name: _____

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SECOND SEMESTER B.TECH DEGREE EXAMINATION, JULY 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 In schools, teachers encourage students to bring pencil pouches (Fig. a) rather than pencil boxes (Fig. b). Give any two valid reasons for this. (5)



Fig. a



Fig. b

- 2 Write any five points comparing the designs of the lunch boxes shown in Figs. c to e. (5)

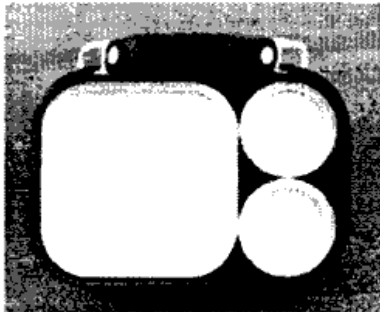


Fig. c



Fig. d



Fig. e

- 3 Identify any 5 DFXs for the design of a laptop. Justify the DFXs proposed by you. (5)
4 Disassemble the given wooden stool (Fig. f) and neatly sketch the individual components. Reassemble the components to make a wooden chair. (5)



Fig. f

- 5 Sketch the design of a wall hanging showing any two traditional designs of Kerala. (5)
6 Prepare neat sketches of trademarks of any five market leading firms in India. (5)

- 7 Applying the principle of value engineering, design a school bag for students residing in a poor home. Neatly sketch your design and prepare a design description for the same. (5)
- 8 Prepare a feedback questionnaire with minimum ten questions for the newly introduced washing powder in the market. (5)

PART B

Answer any 2 questions, each carries 10 marks

- 9 You are given the following. (i) A 1 mm thick rectangular paper sheet of dimensions 100 cm x 60 cm, (ii) A 2 mm dia. cotton thread 50 cm long (iii) A pair of scissors (iv) A bottle of gum (v) A measuring tape.
- a) Write detailed steps with neat sketches for designing a paper carry bag of dimensions 40 cm x 30 cm x 10 cm (cuboid shape) with maximum functionalities using zero waste concept. (5)
- b) By area computation, prove that the zero-waste concept has been effectively utilised in your design. (5)
- 10 Develop a suitable problem statement and come out with a new design/solution covering the effective waste collection system (food waste, waste paper, plastic waste and human waste from toilets) and safe disposal of the collected waste at major stations without harming the environment. (10)
- 11 Design a manual mango plucker (with height adjusting mechanism) which can be used by a common man to pluck and collect safely the mangoes from the mango tree in his yard.
- a) Prepare a detailed design space to develop the design. (4)
- b) Draw neatly the labelled sketches showing your design. (3)
- c) Give a brief design description highlighting the benefits of your design. (3)
