

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
B.Tech Degree S1,S2 (S,FE) Examination May 2021 (2015 Scheme)

**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 List any five standard parts that are commonly found in all smart phones. 5
- 2 Compare the advantages and limitations of the following anti-mosquito devices 5



A



B



C

- 3 State the design objectives, design constraints, and design functions of vacuum cleaners used in shopping malls. 5
- 4 Sketch a new design for a mouse trap. 5
- 5 Explain how you can use 'Internet of Things' in a house having normal household equipment. 5
- 6 Prepare a questionnaire to do a market survey for designing a water bottle for kids. 5
- 7 Prepare neat sketches of the trademarks of any five popular brands. 5
- 8 How can you make the design of a kitchen, modular? 5

**PART B**

*Answer any two questions, each carries 10 marks*

- 9 a) The dumb people (those who are not able to speak) face difficulties in 5

communicating with others. Design a system which can be used by them for effective communication.

- b) Sometimes, street lights are not switched on when it is dark and remain switched on even after sunrise. This leads to unnecessary energy loss. Design a solution for this problem. 5
- 10 Design a solar cooking unit for 'X' where 'X' is (i)ease of assembly, (ii)ease of maintenance, (iii)reliability, (iv)ease of logistics (transportation), (v) safety 10
- 11 a) Prepare a feedback questionnaire for a newly designed biogas plant implemented in your locality 5
- b) Suggest and explain any 2 methods to make your wrist watch more ergonomic. 5

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