

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
FIRST SEMESTER B.TECH DEGREE EXAMINATION, DECEMBER 2017

**Course Code: ME100**

**Course Name: BASICS OF MECHANICAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two questions, each carries 15 marks.*

- 1 a) Distinguish between open and closed systems. Quote one example each for them. (5)
- b) State zeroth law and first law of thermodynamics. What are their engineering significance? (10)
- 2 With the help of proper thermodynamic diagrams derive the expression for air standard efficiency of an Otto cycle. (15)
- 3 a) State advantages and limitations of water tube boilers. (5)
- b) With the aid of neat sketch explain the working of fire tube boiler. (10)

**PART B**

*Answer any two questions, each carries 15 marks.*

- 4 a) What is an automobile? Discuss the classification of automobiles. (10)
- b) Discuss the impact of refrigerants on environment. (5)
- 5 Draw a layout of an automobile. Explain the major components (any three) with help of neat diagrams. (15)
- 6 a) Describe the working of a window air conditioner with neat diagram. (10)
- b) Differentiate between a heat pump and a refrigerator. Show the relation between their COP's (5)

**PART C**

*Answer any two questions, each carries 20 marks.*

- 7 a) What are the major properties of engineering materials? (10)
- b) Give a brief account of different types of engineering materials. (10)
- 8 a) What are the important types of metal joining processes? (6)
- b) Explain any two welding operations with neat diagrams. (14)
- 9 a) Using a block diagram, explain components of a CNC machine. (10)
- b) Explain the mechanism of shaping machine with the help of a neat sketch. (10)

\*\*\*\*