

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SECOND SEMESTER B.TECH DEGREE EXAMINATION, JUNE 2017**

**ME100: BASICS OF MECHANICAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any TWO full questions.*

- 1) a. Derive an expression for the air standard efficiency of a diesel cycle. **(10)**  
b) In an otto cycle, at the beginning of the compression air is at 27°C and 1 bar. The clearance volume is 20% of the swept volume. Find
  - i) Air standard efficiency.
  - ii) Temperature at the end of compression. **(5)**
- 2) a. Give the two statements of the second law of thermodynamics and show their equivalence. **(10)**  
b. Compare and contrast impulse and reaction steam turbines. **(5)**
- 3) a. Describe the working of any one type of boiler with a neat sketch. **(10)**  
b. Discuss briefly about MPFI engine. **(5)**

**PART B**

*Answer any TWO full questions.*

- 4) a) Describe the working of a vapor compression refrigeration system. **(10)**  
b) Define i) COP ii) Ton of refrigeration. **(5)**
- 5) a) Explain the working of a Window air conditioning system. **(10)**  
b) Distinguish between open and closed belt drives. **(5)**
- 6) a) Describe the major components of an automobile and explain their functions. **(15)**  
b) What are the different types of gears used in power transmission? **(5)**

**PART C**

*Answer any TWO full questions.*

- 7) a) Write a short note on different properties of engineering materials. **(10)**  
b) Give examples for five different alloys and state their applications. **(10)**
- 8) a) Explain the different types of rolling mills with suitable sketch. **(12)**  
b) Write a short note on shaping machine. **(8)**
- 9) a) What are CNC machines? How machining is done with such machines? **(10)**  
b) Briefly describe the different types of grinding machines. **(10)**