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Reg. No.:_____   Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
SECOND SEMESTER B.TECH DEGREE EXAMINATION, JUNE2017

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)**

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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)**