

**F****10019**

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, SEPTEMBER 2016**

**ME100 BASICS OF MECHANICAL ENGINEERING**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer ALL questions. Each question carries 3 marks*

1. State the second law of thermodynamics.
2. Which pump requires priming? What is the need for priming?
3. The door of your refrigerator is kept open inside a room. What will happen? Justify your answer.
4. Name few hybrid vehicles in India and mention its importance.
5. Briefly describe Rolling process
6. A designer is planning to design a sand mould without a riser. Can he achieve the casting successfully using this design and validate your answer.
7. A manufacturer demanded his lathe operator to put grip on his product. Suggest an operation to operator for performing the same? And explain the process?
8. Give the differences between a shaper and a planar.

**PART B**

*Answer any 8 Questions (2 QUESTIONS FROM EACH MODULE)*

*Each question carries 6 marks*

**MODULE I**

9. Explain the significance of Clausius inequality.
10. Sketch a Diesel cycle on P-V and T-S diagram and explain.
11. An engine operating on Carnot cycle between temperature limits 20°C and 800°C rejects heat at the rate 200 KJ/s. Determine (i) the ideal thermal efficiency of the cycle. (ii) Power output of the engine.

**MODULE II**

12. With a suitable sketch explain the working of a gas turbine.
13. Identify and explain the engine that gives one power stroke for two revolution of crank shaft
14. With a suitable sketch explain the working of a centrifugal pump.

**MODULE III**

15. Explain the working of a vapour absorption refrigerator with a suitable sketch.

16. Explain the working of a domestic refrigerator with a suitable sketch.
17. Explain the working of a split air conditioner with a suitable sketch.

#### MODULE IV

18. List out major components in an automobile with their functions.
19. Explain the different types of power transmission drives.
20. A good fuel for an SI engine will be a bad fuel for a CI engine. Comment. .

#### PART C

***Answer any 4 questions (ANY 2 QUESTIONS FROM EACH MODULE)***

***Each question carries 7 marks***

#### MODULE V

21. With neat sketch, explain sand casting process.
22. Briefly describe different types of rolling mills with sketches.
23. Describe the forging process with sketches.

#### MODULE VI

24. Explain the working of a drilling machine with the help of a neat diagram.
25. Sketch a milling machine and indicate the important components in it.
26. Describe a shaper with a neat diagram.