

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), MAY 2019

Course Code: BE101-02

Course Name: INTRODUCTION TO MECHANICAL ENGINEERING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer any two questions, each carries 15 marks.

Marks

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| 1 | a) | Explain the working of Carnot cycle with relevant P-V and T-S diagrams. Give the limitations of Carnot Engine. | (10) |
| | b) | State Zeroth law of thermodynamics and its significance. | (5) |
| 2 | a) | Give the classifications of hydraulic turbines. Also describe the method of selection of hydraulic turbines for various applications. | (7) |
| | b) | Explain with sketch the working of solid propellant rockets. Write two merits and demerits of them. | (8) |
| 3 | a) | Write any five milestones in the historical development of steam engines. | (5) |
| | b) | Explain with sketches the working of open cycle and closed cycle gas turbines with P-V diagram. | (10) |

PART B

Answer any two questions, each carries 15 marks.

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| 4 | a) | Give the significance of psychrometric chart. Draw a psychrometric chart and show sensible cooling and dehumidification processes on it. | (8) |
| | b) | Draw and explain a suitable summer air-conditioning system for coastal area. | (7) |
| 5 | a) | With sketches describe lift, drag, and thrust in aerodynamics. | (7) |
| | b) | Draw the block diagram representing the power line from engine to wheel on rear wheel drive vehicle. Give also the role of differential in it. | (8) |
| 6 | a) | Explain the history and development of automobile in the world. | (7) |
| | b) | Explain the working of domestic refrigerator with the help of neat diagram. | (8) |

PART C

Answer any two questions, each carries 20 marks.

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| 7 | a) | How many types of space lattices are found in metals? Explain the principal lattices with their number of atoms. | (10) |
| | b) | Discuss the properties and engineering applications of bearing alloys and composites. | (10) |
| 8 | a) | Differentiate between up milling and down milling processes with sketches. | (10) |

- b) Differentiate between shaper and planer. Draw a line diagram of a shaper and mark its parts. (10)
- 9 a) Describe any three taper turning processes with sketches. (10)
- b) Suggest a method for grinding of cylindrical surfaces. Explain the process with a neat diagram. (10)
