

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
FIRST/SECOND SEMESTER B.TECH DEGREE EXAMINATION, MAY 2019

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.

Marks

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| 1 | a) | State Zeroth law of thermodynamics. Explain its significance. | (5) |
| | b) | Prove the equivalency of Kelvin Planck and Clausius statements. | (5) |
| | C) | Write a short note on thermodynamic work. | (5) |
| 2 | a) | Compare intensive and extensive properties with examples. | (5) |
| | b) | With the help of a neat diagram explain the working of a reaction steam turbine clearly showing the variation of steam pressure and velocity inside the turbine. | (10) |
| 3 | a) | Compare an open cycle and closed cycle gas turbine. | (5) |
| | b) | With the help of a neat diagram explain the working of 4 stroke cycle diesel engine. | (10) |

PART B

Answer any two questions, each carries 15 marks.

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| 4 | a) | Write a short note on the impact of refrigerants on environment. | (5) |
| | b) | With neat sketches explain the working of window air conditioning system. | (10) |
| 5 | a) | Derive the expression for the ratio of belt tensions. | (10) |
| | b) | Write a short note on the classification of gears. | (5) |
| 6 | a) | Explain various desirable properties of refrigerants. | (4) |
| | b) | With a neat sketch explain the working of an internal expanding shoe brake. | (6) |
| | c) | Write a short note on major components of automobiles. | (5) |

PART C

Answer any two questions, each carries 20 marks.

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| 7 | a) | With the help of a neat diagram explain the thermit welding process. | (8) |
| | b) | Explain the extrusion process. Compare direct and indirect extrusion process. | (6) |
| | c) | Write a short note on various casting defects. | (6) |
| 8 | a) | Explain powder metallurgy. Narrate various steps in powder metallurgy. | (5) |
| | b) | With the help of a diagram mark the parts of a drilling machine. Explain any four operations performed on a drilling machine. | (8) |
| | c) | With neat sketches explain the up milling and down milling process. | (7) |
| 9 | a) | Explain different desirable properties of moulding sand. | (4) |

- (b) Compare different rolling mills with neat sketches. (8)
- (c) With a neat sketch explain the principal parts of a shaper and discuss major operations performed in a shaper. (8)
