

Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech examinations (S) September 2020 S1/S2 (2015 Scheme)

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 |
|---|--|-------|
| 1 | a) State Zeroth law of thermodynamics. Explain its importance. | (5) |
| | b) Explain entropy. "Entropy of the universe is increasing", comment. | (5) |
| | c) Explain various thermodynamic systems with examples. | (5) |
| 2 | a) Derive an expression for the efficiency of an Otto cycle. | (10) |
| | b) Compare two stroke and four stroke internal combustion engines. | (5) |
| 3 | a) With a suitable sketch explain the working of a reciprocating pump. | (10) |
| | b) Write any five differences between fire tube and water tube boiler. | (5) |

PART B

Answer any two questions, each carries 15 marks.

- | | | |
|---|--|------|
| 4 | a) Explain the impact of refrigerants on environment. | (5) |
| | b) With a neat sketch explain the working of a domestic refrigerator. | (10) |
| 5 | a) Explain psychrometry. Differentiate between specific humidity and relative humidity. | (5) |
| | b) Explain different types of gear trains with neat sketches. | (10) |
| 6 | a) Explain various classifications of automobiles. | (5) |
| | b) An open belt drive transmits 30 kW with a belt velocity of 5 m/s. Determine the tensions on each side of the belt, if the coefficient of friction is 0.28 and angle of lap is 180° . | (10) |

PART C

Answer any two questions, each carries 20 marks.

- | | | |
|---|--|-----|
| 7 | a) Explain the rolling process. With neat sketches explain different types of rolling mills. | (8) |
| | b) Explain the extrusion process. Compare direct and indirect extrusion process. | (6) |

- c) Explain important mechanical properties of materials. (6)
- 8 a) With a neat diagram explain the main parts of a drilling machine. Explain any four operations performed on a drilling machine. (12)
- b) Compare up milling and down milling processes with neat diagrams. (8)
- 9 a) With a neat sketch explain an arc welding process. (7)
- (b) With a neat diagram explain the main parts a shaping machine. (8)
- (c) Explain any five casting defects. (5)
