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 180^0.	(10)

PART C

Answer any two questions, each carries20 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)

****