Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

FIRST SEMESTER B.TECH DEGREE EXAMINATION(S), DECEMBER 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

1	a)	State and explain second law of thermodynamics.	(5)
	b)	Derive the expression for the efficiency of a Carnot cycle.	(10)
2	a)	Compare intensive and extensive properties with examples.	(5)
	b)	With the help of a neat diagram explain the working of an impulse steam turbine clearly showing the variation of steam pressure and velocity.	(10)
3	a)	With a neat diagram explain the working of a Cochran boiler.	(10)
	b)	Compare an open cycle and closed cycle gas turbine.	(5)

PART B

Answer any two questions, each carries 15 marks.

4	a)	Define the following terms: (i) absolute humidity (ii) relative humidity (iii) DBT (iv) WBT and (v) Sensible heat.	(5)
	b)	With neat sketches explain the working of vapour compression refrigeration system.	(10)
5	a)	With a neat sketch explain the working of a domestic refrigerator.	(10)
	b)	With a neat sketch explain an epicyclic gear train.	(5)
6	a)	With a neat sketch explain the working of a single plate clutch.	(10)
	b)	Two mating spur gears have 60 and 40 teeth. Their common module is 5 mm. Determine centre to centre distance between the gear axes.	(5)

PART C

Answer any two questions, each carries 20 marks.

7	a)	With the help of a neat diagram explain the arc welding process.	(8)
	b)	Explain the extrusion process. Compare direct and indirect extrusion process.	(6)
	c)	Explain important mechanical properties of materials.	(6)
8	a)	Explain forging process. With suitable diagrams discuss any four forging operations.	(8)
	b)	With the help of a flow diagram explain the principle of numerical control machine.	(8)
	c)	Explain any four operations performed on a lathe.	(4)
9	a)	Explain various casting defects.	(8)
	(b)	Explain the steps involved in powder metallurgy process.	(6)
	(c)	Compare up milling and down milling process.	(6)

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