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 MECHANICALENGINEERING SCIENCES

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two questions, each carries 15 marks. Marks

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.

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.

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)

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