Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S1,S2(S,FE) Examination May 2021 (2015 Scheme)

Course Code: BE101-02

Course Name: INTRODUCTION TO MECHANICAL ENGINEERING

Max. Marks: 100 Duration: 3 Hours

PART A

Answer any two questions. Each question carries 15 marks

			Marks
1	a)	What do you mean by the system and the surroundings? Explain the types of the thermodynamic systems.	(6)
	b)	State and explain the Zeroth law of thermodynamics.	(4)
	c)	Explain the principle of Entropy.	(5)
2	a)	Write a brief note on "future scenario of energy in India."	(5)
	b)	How are the steam turbines classified? Explain the working of any one type of turbine.	(5)
	c)	What are the various types of water turbines? Where are they used?	(5)
3	a)	Draw the theoretical P-V diagrams of spark ignition and compression ignition engines and name all the processes.	(5)
	b)	Sketch and explain the working of a single stage air compressor.	(6)
	c)	What is the method used to reduce the work of a compressor?	(4)

PART B

Answer any two questions. Each question carries 15 marks

4	a)	Explain the basic concept of refrigeration.	(4)
	b)	Explain with a neat sketch the working of a vapour compression refrigerator.	(6)
	c)	What are the properties of a good refrigerant?	(5)
5	a)	Explain with sketches the power transmission system in automobile.	(6)
	b)	Explain the specifications used to describe an automobile engine.	(6)
	c)	What is calorific value? Write the standards calorific value of petrol and diesel fuel?	(3)
6	a)	Mention four applications of refrigeration in process industries.	(4)

b) Explain drag force and lift force using a neat sketch with respect to aerodynamics. (6)

c) Write a short note on jet engines. (5)

PART C

Answer any two questions. Each question carries 20 marks

7 a) With a simple block diagram classify materials for engineering applications. (7)

b) Explain why alloys find more application than pure metals? (6)

c) Write a short note on composites and its applications. (7)

8 a) Draw a typical stress - strain diagram for a tensile test on mild steel. Discuss the information which may be obtained for such a test and its practical importance. (7)

b) What is the composition of the synthetic foundry sand? State the necessity of each ingredient. (7)

c) What is forging? Explain (6)

9 a) Differentiate between arc welding and gas welding. (6)

b) What is milling operation? Distinguish between up and down milling operations. (8)

c) Explain the advantages and limitations of a CNC machine. (6)

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