Model Question Paper- I

CBCS SCHEME

First/ Second Semester B.E Degree Examination

Introduction to Mechanical Engineering (1BESC104D)

TIME: 03 Hours **Max. Marks: 100**

Notes:

1. *Answer any FIVE full questions, choosing at least ONE question from each MODULE*
2. *M: Marks, L: Bloom's level, C: Course outcomes.*

		Module - 1	M	L	C
Q. 1	a	With a neat sketch, explain the working principle of Pelton Turbine.	6	2	1
	b	Discuss the need for a Power steering in an automobile and describe the same.	6	2	1
	c	With a neat sketch, explain the working principle of an Air-conditioning system.	8	2	1
		OR			
Q. 2	a	With a neat sketch, explain the brake system of an automobile.	6	2	1
	b	Summarize the parts involved in making of a Drone and highlight the functions of the parts.	6	2	1
	c	With a neat sketch, explain the working principle of a refrigeration system.	8	2	1
		Module – 2			
Q. 3	a	With the help of neat diagrams, explain the working of a 4-stroke petrol engine.	10	2	2
	b	What do you mean by the term Gear train? With the help of a neat sketch, explain the working of a compound gear train.	10	2	2
		OR			
Q. 4	a	List the advantages and limitations of Electric vehicles and Hybrid vehicles.	10	2	2
	b	What do you mean by the term Automatic transmission in automobiles. Explain the working of the same.	10	2	2
		Module – 3			
Q. 5	a	Explain the classification of engineering materials. Discuss the properties and applications of ferrous and non-ferrous metals.	10	2	3
	b	Explain the working principles and applications of piezoelectric materials and magnetorheological (MR) fluids.	10	2	3
		OR			
Q. 6	a	Define composite materials. Explain their classification based on the type of matrix material, and discuss their applications.	10	2	3
	b	What are smart materials? Explain the different types of smart materials and discuss their advantages and disadvantages.	10	2	3
		Module – 4			
Q. 7	a	Describe the classification of manufacturing processes. Explain the factors that influence the selection of a suitable manufacturing process.	6	2	4
	b	Explain the following operations with neat sketches: (i) Drilling (ii) Reaming	8	2	4
	c	What is CNC? Explain the main components of a CNC machine.	6	2	4
		OR			
Q. 8	a	Define the soldering, brazing, and welding processes	6	2	4
	b	With neat sketches, explain any two operations performed on Milling machine.	8	2	4
	c	Explain the basic principle of 3D printing.	6	2	4

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Module – 5					
Q. 9	a	Define automation and explain the different types of automation.	6	2	5
	b	With a neat diagram, explain the working principle and applications of a capacitive sensor.	8	2	5
	c	Explain the need for integration of technologies in modern engineering systems.	6	2	5
OR					
Q. 10	a	Define mechatronics and explain the main elements of a mechatronic system.	6	2	5
	b	What is an optical encoder? Explain its working principle and industrial uses.	8	2	5
	c	Describe Advanced Driver Assistance Systems (ADAS) and explain its important features.	6	2	5