

CBCS SCHEME

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1BESC104D

First Semester B.E./B.Tech. Degree Examination, Dec.2025/Jan.2026 Introduction to Mechanical Engineering

Time: 3 hrs.

Max. Marks: 100

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

Module – 1				M	L	C
Q.1	a.	Discuss the various roles of mechanical engineers in solving the real case problems.	10	L1	CO1	
	b.	With schematic diagram explain briefly the working principle of centrifugal pump.	05	L2	CO1	
	c.	State the working principle of power steering with schematic sketch.	05	L1	CO1	
OR						
Q.2	a.	With block diagram explain the working of refrigeration system.	10	L2	CO1	
	b.	With sketch state the working principle of Pelton turbine.	05	L1	CO1	
	c.	State the functions of important parts of drone.	05	L2	CO1	
Module – 2						
Q.3	a.	Using appropriate diagrams, explain how a 4-stroke diesel engine works, and represent the cycle on a P–V diagram.	10	L2	CO2	
	b.	Sketch the basic layout of an electric vehicle and label its components.	06	L2	CO2	
	c.	State the advantages of Electrical vehicles.	04	L1	CO2	
OR						
Q.4	a.	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	L2	CO2	
	b.	With sketch discuss in brief about Hybrid Electrical.	10	L1	CO2	
Module – 3						
Q.5	a.	Explain the properties and applications of ferrous metals.	08	L2	CO3	
	b.	Differentiate between ferrous and non ferrous metals.	06	L4	CO3	
	c.	What are composite materials? List the classification of composite materials based on matrix and reinforcement materials.	06	L1	CO3	
OR						
Q.6	a.	State the advantages, disadvantages and applications of composite materials.	08	L2	CO3	

	b.	What are smart materials? State the applications of smart materials.	06	L1	CO3
	c.	State advantages and disadvantages of shape memory alloys.	06	L1	CO3
Module – 4					
Q.7	a.	Describe the classification of manufacturing processes. Explain the factors that influence the selection of a suitable manufacturing process.	08	L1	CO4
	b.	State the principles of welding and brazing.	06	L1	CO4
	c.	With sketches explain turning and knurling processes of lathe.	06	L2	CO4
OR					
Q.8	a.	State the principle of drilling. With neat sketches explain reaming and tapping operations of drilling machine.	08	L1	CO4
	b.	With block diagram explain the basic components of CNC machine.	06	L2	CO4
	c.	Explain the principle of 3D printing. State the standard steps in 3D printing process.	06	L2	CO4
Module – 5					
Q.9	a.	Define automation and explain different types of automation.	08	L1	CO5
	b.	What is Mechatronics system? Mention its applications.	06	L2	CO5
	c.	State the working principle of Potentiometer as sensor and mention its applications.	06	L1	CO5
OR					
Q.10	a.	What is an optical encoder? Explain its working principle and industrial applications.	08	L2	CO5
	b.	Explain why it is necessary to integrate technology.	06	L2	CO5
	c.	What is Advanced Driver Assistance Systems (ADAS) and state its features.	06	L1	CO5
