EAST POINT COLLEGE OF ENGINEERING & TECHNOLOGY
An Autonomous Institution Affiliated to Visvesvaraya Technological University (VTU) Belagavi

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EPEMM203

Second Semester B.E. Degree Examination, July 2025
ELEMENTS OF MECHANICAL ENGINEERING

TIME:3 hrs. Max.Marks:100

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

		Module-1	M	L	C
Q.1	a	Briefly explain the emerging trends of mechanical Engineering in Manufacturing and Energy Sector.	8	L2	CO1
	b	Classify and explain different types of Smart Materials.	7	L2	CO2
	c	Describe the Mechanical Properties of materials.	5	L1	CO2
		OR			
Q.2	a	Discuss the role of Mechanical Engineer in the industry and Society.	8	L2	CO1
	b	Explain any three types of ferrous metals.	6	L2	CO2
	c	Elaborate the Electrical and Magnetic Properties of Materials	6	L2	CO2
		Module–2			
Q.3	a	Explain with a neat sketch the Taper Turning, knurling and Thread cutting operations of Lathe Machine Operations.	8	L2	CO2
	b	Explain with a neat sketch drilling, reaming, counter boring, counter sinking operations of Drilling Machine Operations.	7	L2	CO2
	c	Explain any two methods involved in 3D printing.	5	L2	CO2
		OR			
Q.4	a	Briefly explain about to CNC Machines and enlist the advantages of CNC machine in mechanical Industry.	8	L2	CO2
	b	Explain with a neat sketch, any three types of Milling Machine Operations.	6	L2	CO2
	c	Briefly explain about to 3D printers and enlist the advantages, applications of it.	6	L2	CO2
		Module–3			
Q.5	a	With a neat Sketch, explain the working of 4 stroke Diesel engine with P-V diagram.	8	L3	CO2
	b	i) Differentiate 2 Stroke and 4 stroke engines. ii) Differentiate Petrol engine and Diesel engines.	6	L3	CO2
	c	With the need sketch explain robotic anatomy and Its Applications.	6	L3	CO2

		OR			
Q.6	**a**	With a suitable sketch explain the different parts of an I.C Engine.	**6**	**L2**	**CO2**
	b	With a neat Sketch, explain the working of 4 stroke petrol engine with P-V diagram.	**8**	**L3**	**CO2**
	c	Explain with a neat sketch any two of the types of robotic configurations?	**6**	**L3**	**CO3**
		Module–4			
Q.7	**a**	Derive the expression for length of belt in cross belt drive.	**8**	**L3**	**CO3**
	b	Briefly explain Open Belt Drives & Crossed Belt Drives, and mention their differences.	**7**	**L2**	**CO3**
	c	Briefly explain the Types of Electric Motors for Drives.	**5**	**L2**	**CO4**
		OR			
Q.8	**a**	Derive the expression for length of belt in open belt drive.	**8**	**L3**	**CO3**
	b	Explain types of gears, and Discuss briefly about chain drives?	**7**	**L2**	**CO3**
	c	Elaborate the Industrial Applications of Electrical Drives.	**5**	**L3**	**CO4**
		Module–5			
Q.9	**a**	With a neat Sketch, explain the working of Electric vehicles.	**8**	**L2**	**CO3**
	b	Discuss the need of Electric and Hybrid vehicles. List their advantages and limitations.	**6**	**L2**	**CO3**
	c	Define Mechatronics with a neat sketch explain open loop and closed loop systems?	**6**	**L2**	**CO3**
		OR			
Q.10	**a**	With a neat Sketch, explain the working of Hybrid vehicles.	**8**	**L3**	**CO3**
	b	With the need sketch explain robotic anatomy and Its Applications. Explain the types of joints?	**7**	**L2**	**CO2**
	c	Explain about the EV Batteries and Energy Storage.	**5**	**L2**	**CO3**

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