

CBCS SCHEME

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1BEME105/205

First/Second Semester B.E./B.Tech. Degree Examination, June/July 2026 Elements of 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.
3. Use of Steam Tables is permitted.*

Module – 1			M	L	C
Q.1	a.	Define composite material. Explain the classification of composite materials with suitable examples.	10	L2	CO1
	b.	Classify the Ferrous and Non Ferrous Metal. Explain the Properties and Applications of both Metals.	10	L2	CO1
OR					
Q.2	a.	Define Nanomaterials. Explain the types of nanomaterials with suitable examples.	10	L2	CO1
	b.	Describe the applications of composite materials in aerospace and automobile industries.	10	L2	CO1
Module – 2					
Q.3	a.	With a neat sketch explain the Working principle of Four stroke SI Engine.	10	L2	CO2
	b.	5 kg of wet steam of dryness 0.8, passes from a boiler to a superheater at a constant pressure of 1MPa abs. In the super heater its temperature increases to 350 ⁰ C. Determine the amount of heat supplied in the superheater. The specific heat of superheated steam $C_{ps} = 2.25 \text{ kJ/kgK}$.	10	L3	CO2
OR					
Q.4	a.	With a neat sketch explain the Working principle of Four stroke Diesel Engine.	10	L2	CO2
	b.	Find the specific volume and enthalpy of 1kg of steam at 0.8MPa: a) When the dryness fraction is 0.9 and b) When the Steam is Superheated to a temperature of 300 ⁰ C. The Specific heat of Super-heated steam is 2.25kJ/kgK.	10	L3	CO2
Module – 3					
Q.5	a.	List and Explain any Two Drilling Operations.	10	L2	CO3
	b.	Compare soldering and brazing processes.	10	L2	CO3
OR					
Q.6	a.	List and Explain any Two Lathe Operations.	10	L2	CO3
	b.	Describe the working principle of electric arc welding.	10	L2	CO3
1 of 2					

Module – 4

Q.7	a.	With a Neat sketch Explain Open and Cross belt drives.	10	L2	CO5
	b.	Describe different types of robot sensors with their applications	10	L2	CO4

OR

Q.8	a.	List the Various Types of Gears. Explain any two with Sketch.	10	L2	CO5
	b.	Bring out complete classification of Robot configurations and explain any one configuration with a suitable sketch.	10	L2	CO4

Module – 5

Q.9	a.	Define Automation, classify and explain them with examples for each category.	10	L2	CO6
	b.	Explain the applications of Artificial Intelligence (AI) in the Manufacturing and automobile industry with example.	10	L2	CO6

OR

Q.10	a.	Explain the basic steps involved in additive manufacturing.	10	L2	CO6
	b.	Explain the components of CNC with block diagram.	10	L2	CO6

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