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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

September / October 2024 Supplementary Examinations

Programme: B.E. **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 21ME1ESEME / 21ME2ESEME **Max Marks: 100**
Course: Elements of Mechanical Engineering

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	*CO*	*PO*	Marks
1	a)	Discuss non-renewable energy resources.	*CO1*	*PO1*	**04**
	b)	Explain the working of a parabolic solar collectors.	*CO2*	*PO1*	**08**
	c)	Explain the formation of steam at constant pressure with help of Temperature-Enthalpy diagram.	*CO2*	*PO1*	**08**
		OR			
2	a)	Explain the working of a Pelton turbine.	*CO2*	*PO1*	**08**
	b)	Explain the wind power plant with a neat sketch.	*CO2*	*PO1*	**08**
	c)	Define Hydraulic turbine. Classify them based on direction of flow.	*CO1*	*PO1*	**04**
		UNIT-II			
3	a)	Explain the Fiber reinforced composite and Metal matrix composites with the help of neat sketches.	*CO2*	*PO1*	**10**
	b)	Contrast between Welding, Brazing and Soldering methods.	*CO2*	*PO1*	**10**
		OR			
4	a)	With the help of neat sketches explain TIG and MIG welding.	*CO2*	*PO1*	**10**
	b)	Discuss the three modes of heat transfer. Explain the working of an automobile radiator.	*CO2*	*PO1*	**10**
		UNIT-III			
5	a)	With the help of neat sketch and p-v diagram, explain the working of SI Engine.	*CO2*	*PO1*	**10**
	b)	With the help of neat sketches explain the working Hybrid Electric vehicles. What are the advantages and disadvantages of Hybrid Electric Vehicles.	*CO2*	*PO1*	**10**

			OR			
	6	a)	With the help of neat sketches explain the working of Vapour compression refrigeration system.	*CO2*	*PO1*	**10**
		b)	With the help of block diagram explain the working of domestic Air conditioning system.	*CO2*	*PO1*	**10**
			UNIT-IV			
	7	a)	With the help of neat sketch, explain the working of Flat belt drives and V Belt drives.	*CO2*	*PO1*	**08**
		b)	Classify gear drives. Also explain Simple and Compound gear drives.	*CO2*	*PO1*	**08**
		c)	Discuss the applications of Robots.	*CO2*	*PO1*	**04**
			OR			
	8	a)	Describe the Machine and Mechanism. What are the different applications of rotary motion and Oscillatory motion?	*CO2*	*PO1*	**08**
		b)	With help of neat sketch, explain the Anatomy of Robot.	*CO2*	*PO1*	**08**
		c)	Discuss the differences between Open and Cross Belt drives.	*CO2*	*PO1*	**04**
			UNIT-V			
	9	a)	With the help of neat sketch, explain the working of following taper turning methods: i. Tailstock offset method. ii. Taper turning attachment method.	*CO2*	*PO1*	**10**
		b)	Discuss the open loop type of control system with the help of an example in detail.	*CO2*	*PO1*	**10**
			OR			
	10	a)	With the help of neat sketch, explain the up-milling and down-milling operations.	*CO2*	*PO1*	**10**
		b)	Discuss the concept of smart manufacturing and list its applications.	*CO2*	*PO1*	**10**

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