U.S.N.										

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

Autonomous Institute Affiliated to VTU

February / March 2024 Semester End Main 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)	Contrast between Conventional and Non-conventional resources of energy.	CO1	PO1	**04**
	b)	Explain the working and construction of Heliothermal process with help of neat sketch used in high temperature applications.	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 Hydel Power plant.	CO2	PO1	**08**
	b)	Explain the working of a Centrifugal Pump with the help of a neat sketch.	CO2	PO1	**08**
	c)	How do you classify Hydraulic turbines?	CO1	PO1	**04**
		UNIT-II			
3	a)	Explain the shape memory alloys with suitable sketches.	CO2	PO1	**08**
	b)	Contrast between Welding and Soldering methods.	CO2	PO1	**08**
	c)	What do you mean by Ceramics? Give examples.	CO2	PO1	**04**
		OR			
4	a)	How do you classify metal joining process? With the help of a neat sketch explain the working of Electric Arc welding.	CO2	PO1	**10**
	b)	What are the three modes of heat transfer? Explain their governing laws, discuss the principle of heat transfer in Automobile Radiators.	CO2	PO1	**10**
		UNIT-III			
5	a)	With the help of neat sketch, explain the working of a Diesel Engine.	CO2	PO1	**10**

		b)	With the help of neat sketch explain the working of Electric vehicles. What are the advantages and disadvantages of Electric Vehicles?	*CO2*	*PO1*	**10**
			OR			
	6	a)	With the help of a neat sketch, explain the working of Vapour absorption type of refrigeration system.	*CO2*	*PO1*	**10**
		b)	With the help of a neat sketch, explain the working of Air conditioning system.	*CO2*	*PO1*	**10**
			UNIT-IV			
	7	a)	With the help of a neat sketch explain the working of Flat belt drive.	*CO2*	*PO1*	**06**
		b)	Classify Gear Drives.	*CO2*	*PO1*	**04**
		c)	With the help of neat sketch, explain the Cartesian and Spherical type of Robotic configuration. Also discuss the applications of Robots.	*CO2*	*PO1*	**10**
			OR			
	8	a)	Define the Machine and Mechanism. What are the different applications of linear motion and Rotary motion?	*CO2*	*PO1*	**08**
		b)	With help of neat sketch, explain the Anatomy of Robot.	*CO2*	*PO1*	**08**
		c)	Bring out the differences between Belt drives and Gear drives.	*CO2*	*PO1*	**04**
			UNIT-V			
	9	a)	With the help of neat sketch explain the following taper turning methods: i. Swiveling the compound tool post. ii. Tailstock offset method.	*CO2*	*PO1*	**10**
		b)	Explain the open and closed loop type of control system in Mechatronics. Also explain the applications of Mechatronics.	*CO2*	*PO1*	**10**
			OR			
	10	a)	With the help of neat sketch, explain the following: Turning, Facing and Knurling.	*CO2*	*PO1*	**10**
		b)	What are advantages and disadvantages of CNC? Explain the components of a CNC machine.	*CO2*	*PO1*	**10**

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