U.S.N.										

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

Autonomous Institute Affiliated to VTU

September 2024 Supplementary Examinations

Programme: B.E. **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 22ME1ESIME / 22ME2ESIME **Max Marks: 100**
Course: Introduction to 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)	Explain the advantages and disadvantages of renewable energy systems.	*CO1* *CO2*	*PO1* *PO7*	**04**
	b)	Explain the principle of wind energy generation using relevant sketches.	*CO1*	*PO1* *PO7*	**06**
	c)	With a neat sketch, explain the working of hydel power plant.	*CO1*	*PO1* *PO7*	**10**
		UNIT - II			
2	a)	Explain the following lathe operations with sketches: i) Taper turning by tailstock offset method ii) Plain turning and iii) Facing.	*CO1*	*PO1* *PO7*	**10**
	b)	With a block diagram explain in detail the steps involved in 3D printing.	*CO1*	*PO1* *PO7*	**10**
		OR			
3	a)	Explain the following operations with sketches: i) Boring, ii) Plain milling, iii) Reaming, and iv) End milling.	*CO1*	*PO1* *PO7*	**10**
	b)	Define CNC and explain the functions of each component of CNC.	*CO1*	*PO1* *PO7*	**10**
		UNIT - III			
4	a)	Write the classification of IC Engine.	*CO2*	*PO1* *PO7*	**05**
	b	Differentiate between 4 stroke petrol and diesel engines.	*CO2*	*PO1* *PO7*	**05**
	c)	The following observations were recorded during a test on a 4-stroke IC engine Bore= 25 cm; Stroke = 40 cm; Crank speed = 250 rpm; Net load on brake drum = 70 kg; Diameter of brake drum = 2 m; Indicated MEP = 6 Bar. Determine: BP, IP, FP, Mechanical Efficiency.	*CO3*	*PO1*	**10**

			OR			
	5	a)	Differentiate between electric and Hybrid vehicles.	*CO2*	*PO1* *PO7*	**05**
		b)	A 4 cylinder 4-stroke IC engine running at 1000 rpm develops an indicated power of 15 kW. The MEP is 5×10^5 N/m^2. Find diameter of the cylinder and stroke of piston when the ratio of the diameter to stroke is 0.8.	*CO3*	*PO1*	**05**
		c)	Explain the working of diesel engine using P-V diagram and relevant sketches.	*CO1*	*PO1* *PO7*	**10**
			UNIT - IV			
	6	a)	Define metal matrix composites. Mention the applications.	*CO1*	*PO1* *PO7*	**06**
		b)	Explain the principle of arc welding with a neat sketch.	*CO1*	*PO1* *PO7*	**06**
		c)	Differentiate between soldering and brazing.	*CO2*	*PO1* *PO7*	**08**
			UNIT - V			
	7	a)	Explain with a block diagram, the working of request-response communication model.	*CO1*	*PO1* *PO7*	**06**
		b)	With a block diagram explain the components of industrial automation.	*CO1*	*PO1* *PO7*	**06**
		c)	Explain the polar and cylindrical configuration of robots with neat sketches.	*CO1*	*PO1* *PO7*	**08**

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