U.S.N.										

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

Autonomous Institute Affiliated to VTU

January / February 2025 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 22AS7OEATE **Max Marks: 100**
Course: Applied Thermal 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 Herschel-Berkley model and Casson fluid model.	CO1	PO1	**10**
	b)	Explain the factors for thermal comfort.	CO1	PO1	**10**
		OR			
2	a)	Explain: i) Thermal Comfort and Basal metabolic rate ii) Metabolic and Perfusion heat source	CO1	PO1	**10**
	b)	Explain the thermoregulation of body exposed to hot Environment.	CO1	PO1	**10**
		UNIT-II			
3	a)	With the help of neat sketch explain declination angle, Hour angle, latitude angle.	CO2	PO1	**10**
	b)	With the help of neat sketch explain the working of Solar desalination plant.	CO2	PO1	**10**
		OR			
4	a)	What are the different orientations and tracking modes in solar parabolic type of collectors?	CO2	PO1	**08**
	b)	Explain the performance analysis to design Solar flat type of collector.	CO2	PO1	**12**
		UNIT - III			
5	a)	Explain the nature of wind.	CO2	PO1	**08**
	b)	Classify wind energy conversion. What are the advantages and Disadvantages of wind energy conversion?	CO2	PO1	**12**
		OR			

	6	a)	With the help of neat sketches explain the performance curve of three bladed wind turbine.	*CO2*	*PO1*	**10**
		b)	What are the different theories of Lift generation?	*CO2*	*PO1*	**10**
			UNIT-IV			
	7	a)	Explain the conduction type of cooling in chip carriers with the help of neat sketch.	*CO3*	*PO1*	**10**
		b)	Classify and explain liquid cooling system in electronic component devices.	*CO3*	*PO1*	**10**
			OR			
	8	a)	What is the thermal environment required in cooling of electronics component?	*CO3*	*PO1*	**08**
		b)	Explain conduction cooling in printed circuit board and heat frame technique with the help of neat sketches.	*CO3*	*PO1*	**12**
			UNIT - V			
	9	a)	With the help of neat sketch explain Fanno flow.	*CO4*	*PO1*	**10**
		b)	How to avoid spillage in Supersonic flow? Explain the with help of suitable sketch.	*CO4*	*PO1*	**10**
			OR			
	10	a)	What are different length scales in turbulent flame propagation?	*CO4*	*PO1*	**08**
		b)	Explain physical nature in turbulent flow in flames.	*CO4*	*PO1*	**12**

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