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

Autonomous Institute Affiliated to VTU

May / June 2025 Semester End Main Examinations

Programme: B.E.

Semester: VIII

Branch: Institutional Elective

Duration: 3 hrs.

Course Code: 22AS8OECAE

Max Marks: 100

Course: Cryogenics for Aerospace Engineering

Instructions: Answer any FIVE full questions, choosing one full question from each unit.

			UNIT - I	CO	PO	Marks
1	a)	Explain the properties and uses of Liquid Hydrogen		CO1	PO1	10
	b)	Explain the properties and uses of Liquid Helium		CO1	PO1	05
	c)	What do you mean by second sound propagation in liquid helium?		CO1	PO1	05
OR						
2	a)	Explain: i. Rollin film ii. Fountain effect		CO1	PO1	12
	b)	What are properties of Liquid oxygen, liquid Argon and liquid Neon?		CO1	PO1	08
			UNIT - II			
3	a)	Explain the Thrust and velocity gains with the help of neat sketches		CO2	PO1	10
	b)	Explain Gas Generator cycle with the help of neat sketches		CO2	PO1	10
OR						
4	a)	Explain boil off rate in Cryogenic tank		CO2	PO1	05
	b)	Explain the Criteria for design of Cryogenic Engines		CO2	PO1	05
	c)	Explain Staged Combustion cycle with help of neat sketches		CO2	PO1	10
			UNIT - III			
5	a)	Explain Dual pressure Linde Hampson method with help of neat Sketches.		CO3	PO1	10
	b)	Explain Pre-cooled Linde Hampson method with help of neat Sketches		CO3	PO1	10

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.

OR					
6	a)	Explain Heylandt method with help of neat Sketches.	CO3	PO1	10
	b)	Explain Claude method with help of neat Sketches	CO3	PO1	10
UNIT-IV					
7	a)	Explain Gifford McMohan cryocooler with help of neat schematic sketches	CO4	PO1	10
	b)	Explain Gas filled foam and fibrous material type of insulation	CO4	PO1	05
	c)	Explain Vacuum type of insulation in cryogenics	CO4	PO1	05
OR					
8	a)	Explain Stirling type cryocoolers with help of neat schematic sketches	CO4	PO1	10
	b)	Explain Opacified powders and Multi layer type of insulation	CO4	PO1	10
UNIT - V					
9	a)	What is Run down time in Vacuum?	CO5	PO1	05
	b)	What is Pumping speed in Vacuum technology?	CO5	PO1	05
	c)	Explain the working of root pump with the help of neat sketches	CO5	PO1	10
OR					
10	a)	With the help of neat sketch explain the Diffusion pump used in Vacuum technology	CO5	PO1	10
	b)	With the help of neat sketch explain the Turbomolecular pump used in Vacuum technology	CO5	PO1	10
