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

Autonomous Institute Affiliated to VTU

May 2024 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Aerospace Engineering **Duration: 3 hrs.**
Course Code: 21AE8HSERG **Max Marks: 100**
Course: Ergonomics

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)	Define Ergonomics. Discuss about The effectiveness of ergonomic interventions.	*CO 1*	*PO 1*	**10**
	b)	Discuss about goal of safety in ergonomics with an example.	*CO 1*	*PO 1*	**10**
		UNIT - II			
2	a)	What do you understand by ergonomic design of products? What are the advantages of ergonomic designing?	*CO 2*	*PO 1*	**10**
	b)	Describe different types of display units that often are associated with the products. Discuss the design factors that are to be considered while designing these display units.	*CO 2*	*PO 1*	**10**
		OR			
3	a)	Enumerate the general guidelines in designing the display units ergonomically.	*CO 2*	*PO 1*	**10**
	b)	Discuss the design aspects of the following controlling devices with reference to the ergonomics: (i) Push Buttons (ii) Toggle Switches (iii) Knobs	*CO 2*	*PO 1*	**10**
		UNIT - III			
4	a)	By what aspects the man-machine relationship can be described? Explain.	*CO 3*	*PO 1*	**10**
	b)	Explain the characteristics of man-machine systems.	*CO 3*	*PO 1*	**10**
		OR			
5	a)	Discuss functions of man element in man-machine system.	*CO 3*	*PO 1*	**10**

		b)	Explain the major types/classifications of man-machine systems that are often considered.	***CO 3***	***PO 1***	**10**
			UNIT - IV			
	6	a)	What are the different types of workloads? Give suitable examples.	***CO 3***	***PO 1***	**10**
		b)	How does the fatigue occur in human beings? Explain the theory of mechanism of causing fatigue.	***CO 3***	***PO 1***	**10**
			UNIT - V			
	7	a)	Define Anthropometry and mention any 2 fields where this can be used. Describe the design for anthropometry.	***CO 4***	***PO 1***	**10**
		b)	Enumerate on the application of ergonomics in aerospace engineering.	***CO 4***	***PO 1***	**10**

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May 2024 Semester End Main Examinations

Programme: B.E. **Semester: VIII**
Branch: Aerospace Engineering **Duration: 3 hrs.**
Course Code: 21AE8OECAE **Max Marks: 100**
Course: Cryogenics for Aerospace Engineering

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

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)	What is lambda line for Liquid Helium? Represent it with neat Sketch.	CO 1	PO 1	**08**
	b)	Explain the properties and uses of Liquid Neon.	CO 1	PO 1	**05**
	c)	What do you mean by second sound propagation in liquid helium?	CO 1	PO 1	**07**
		UNIT - II			
2	a)	What are the challenges to store Cryogenic Propellants for Aerospace application?	CO 2	PO 1	**10**
	b)	Explain Gas Generator cycle with the help of neat sketches.	CO 2	PO 1	**10**
		OR			
3	a)	Explain two phase flow in reduced gravity in cryogenic propellant tank.	CO 2	PO 1	**05**
	b)	Explain the Criteria for design of Cryogenic Engines.	CO 2	PO 1	**05**
	c)	Explain Expander type of cryogenic bi propellant cycle with help of neat sketches. Also arrange the type of cycle with increasing order of specific impulse	CO 2	PO 1	**10**
		UNIT - III			
4	a)	Explain Kaptiza method of liquefaction with help of neat Sketches.	CO 3	PO 1	**10**
	b)	Explain Heylandt method liquefaction with help of neat sketches.	CO 3	PO 1	**10**
		UNIT-IV			
5	a)	Explain Pulse tube cryocooler with help of neat schematic sketches.	CO 4	PO 1	**10**

		b)	Explain Gas filed foam and fibrous material type of insulation.	*CO 4*	*PO 1*	**05**
		c)	Explain Multi layer type of insulation in cryogenics.	*CO 4*	*PO 1*	**05**
			OR			
	6	a)	Explain Stirling type crycoolers with help of neat schematic sketches.	*CO 4*	*PO 1*	**10**
		b)	Explain Opacified powders type of insulation.	*CO 4*	*PO 1*	**10**
			UNIT - V			
	7	a)	What is necessity of Vaccum Technology in Cryogenics? Classify Vaccum pumps.	*CO 5*	*PO 1*	**10**
		b)	Explain the working of Rotary vane pump with the help of neat sketches.	*CO 5*	*PO 1*	**10**

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