U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2024 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Aerospace Engineering **Duration: 3 hrs.**
Course Code: 22AS3PCIAE **Max Marks: 100**
Course: INTRODUCTION TO AEROSPACE 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	Marks
1	a)		Write a short note on standard atmosphere.	**6**
	b)		Calculate the standard atmosphere values of T, P and ρ at an altitude of 13 km.	**8**
	c)		Explain the functions of major components of a space vehicle.	**6**
			UNIT - II	
2	a)		Describe the types of orbits.	**6**
	b)		Mention and explain different types of drags.	**6**
	c)		List out the factors that affect drag of an aircraft and also give detailed explanation for each factor with suitable diagrams.	**8**
			OR	
3	a)		What do you understand by dynamic stability? Explain its types with suitable sketches.	**8**
	b)		Define the terms range and endurance.	**6**
	c)		List out the factors that affect lift of an aircraft and also give detailed explanation for each factor with suitable diagrams.	**6**
			UNIT - III	
4	a)		With the help of neat sketch explain the working of turboprop engine. Also give its advantages and disadvantages over other gas turbine engines.	**8**
	b)		List the uses of i) Aluminium alloys ii) Titanium iii) Stainless Steel	**6**
	c)		With the help of suitable sketches describe the monocoque, semi-monocoque and truss structure of aircraft.	**6**

			UNIT - IV	
	5	a)	Explain the working principle of a hydraulic system with the help of a block diagram.	**8**
		b)	Draw the basic pack of 6-instruments in a cockpit and also specify its location.	**8**
		c)	Briefly describe the principle of operation of a vertical speed indicator with the help of a neat diagram.	**4**
			OR	
	6	a)	Explain the working principle of a pneumatic system with the help of a block diagram.	**8**
		b)	With the help of a suitable diagram, explain the the "T" configuration of flight instruments and also mention its location.	**5**
		c)	Write short notes on mechanical systems and their components in an aircraft system.	**7**
			UNIT - V	
	7	a)	Mention and define the challenges being faced by the aerospace industry with growing technology.	**8**
		b)	Define Crashworthiness. Explain in detail about crashworthy systems.	**5**
		c)	Explain the emerging technology trends in aircraft manufacturing.	**7**

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