U.S.N.										

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

Autonomous Institute Affiliated to VTU

April 2024 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: Aerospace Engineering **Duration: 3 hrs.**
Course Code: 19AE3DCIAE / 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

1	a)	Enumerate the spacecraft classification and also give its detailed explanation with a suitable example for each type.	**8**
	b)	Calculate the standard atmosphere values of T, P and ρ at an altitude of 18 km.	**8**
	c)	Explain the functions of major components of an airplane.	**4**

UNIT - II

2	a)	Explain the Kepler's law of planetary motion.	**6**
	b)	What do you understand by dynamic stability? Explain its types with suitable sketches.	**4**
	c)	List out the factors that affect lift of an aircraft and also give detailed explanation for each factor with suitable diagrams.	**10**

OR

3	a)	Mention and explain different types of drags.	**6**
	b)	What do you understand by V-n diagram? Explain in detail.	**6**
	c)	List out the factors that affect drag of an aircraft and also give detailed explanation for each factor with suitable diagrams.	**8**

UNIT - III

4	a)	Explain the working principle of Brayton cycle.	**4**
	b)	Explain the wing structure of an aircraft with the help of a neat sketch.	**8**
	c)	Describe the working principle of turbofan engine and give its advantages over other turbine engines.	**8**

UNIT - IV

5	a)	Illustrate the working principle of a pitot static tube. Also list out the instruments which works based on this system.	**8**

	b)	With the help of a suitable diagram, explain the the “T” configuration of flight instruments and also mention its location.	**6**
	c)	Briefly describe the principle of operation of an altimeter with the help of a neat diagram.	**6**

OR

6	a)	Draw the basic pack of 6-instruments in a cockpit and also specify its location.	**6**
	b)	Explain the working principle of a pneumatic system with the help of a block diagram.	**8**
	c)	Explain the fundamental principle of pascal’s law with the help of a suitable diagram.	**6**

UNIT - V

7	a)	Mention and define the challenges being faced by the aerospace industry with growing technology.	**8**
	b)	Mention the top aerospace companies in India and their role.	**5**
	c)	Explain the emerging technology trends in aviation industry.	**7**

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