U.S.N.										

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

Autonomous Institute Affiliated to VTU

December 2023 Supplementary 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.

UNIT - I

1	a)	Discuss about the Gradient and Isothermal layers of atmosphere with a neat sketch. State the equations relating the Pressure, Temperature and Density.	**10**
	b)	With a neat sketch explain the anatomy of airplane and write the functions of various components of airplane.	**10**

UNIT - II

2	a)	Discuss the forces acting on airplane with neat sketch.	**05**
	b)	Discuss the various types of drag.	**05**
	c)	Define the following i) Range ii) Endurance iii) Gliding flight iv) Cruise v) Climbing flight	**10**

OR

3	a)	Draw and explain the features of V-n diagram.	**10**
	b)	Explain the types of orbits.	**05**
	c)	Explain the Kepler's law of planetary motion.	**05**

UNIT - III

4	a)	With a neat sketch, explain the working principle of turbo prop and turbo jet engine.	**10**
	b)	State the Thrust equation of a Rocket and explain the terms.	**04**
	c)	Explain the following i) Dutch roll, ii) Autorotation and iii) Spin	**06**

UNIT - IV

5	a)	Discuss the general properties of materials to be considered for aircraft constructions.	**10**

	b)	Explain the monocoque and semi-monocoque fuselage structures with neat sketches.	**10**

OR

6	a)	Discuss about the various metallic and non-metallic materials for aircraft applications.	**12**
	b)	Discuss about the composite materials used for aircraft applications.	**08**

UNIT - V

7	a)	Discuss the major challenges in aerospace engineering industry.	**10**
	b)	Discuss how the advances in materials and manufacturing processes helping the aerospace industry.	**10**

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