U.S.N.										

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

Autonomous Institute Affiliated to VTU

August 2024 Supplementary Examinations

Programme: B.E. **Semester: III**
Branch: Aerospace Engineering **Duration: 3 hrs.**
Course Code: 19AE3DCIAE **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)	List out, with a sketch, and explain the various major parts of an airplane and their function.	**6**
	b)	Calculate the standard atmosphere values of T, p and ρ at an altitude of 14km.	**8**
	c)	Define a Reynold's number. Mention it's value for a laminar flow in a closed tube.	**6**

UNIT - II

2	a)	Describe the types of orbits.	**6**
	b)	Explain the Kepler's law of planetary motion.	**4**
	c)	List out the factors that affect drag of an aircraft and also give a detailed explanation for each factor with suitable diagrams.	**10**

OR

3	a)	Derive the equation for lift-off distance (S_{LO}).	**10**
	b)	Define the terms range and endurance.	**4**
	c)	What do you understand by V-n diagram? Explain in detail.	**6**

UNIT - III

4	a)	Explain briefly the semi-monocoque construction of a fuselage and a wing structure of an aircraft with simple sketches.	**8**
	b)	List the uses of i) Aluminium alloys ii) Titanium iii) Stainless Steel iv) Composites	**8**
	c)	Give the applications of ramjet engines.	**4**

UNIT - IV

5	a)	With the help of a suitable sketch, explain the working principle of a pneumatic system by mentioning the function of its each component used in an aircraft.	**10**
	b)	Write down the construction details and explain the working principle of an altimeter and an airspeed indicator.	**10**

OR

6	a)	With a neat diagram explain about the gyroscopic instruments used in an aircraft.	**6**
	b)	Write a short note on the pitot static system and its based aircraft instruments.	**8**
	c)	Explain the functioning of a On-Board Oxygen Generating System (OBOGS) in an aircraft.	**6**

UNIT - V

7	a)	Mention the top aerospace companies in India and their role.	**8**
	b)	Define Crashworthiness. Explain in detail about crashworthy systems.	**5**
	c)	Write a short note on the role of public and private sector industries in the development of aerospace technology in India.	**7**

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