

Hall Ticket No

--	--	--	--	--	--	--	--	--

Question Paper Code: AAE001



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech III Semester End Examinations (Supplementary) - January, 2019

Regulation: IARE – R16

INTRODUCTION TO AEROSPACE ENGINEERING

Time: 3 Hours

(AE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

1. (a) Write in detail about the development of balloons during the 18th century that flew in air and created history in lifting a human being off the ground. [7M]
(b) Write short notes on first three layers of earth's atmosphere. [7M]
2. (a) Write a short note on radioactive environment of earth. Explain about van Allen belts. [7M]
(b) Discuss about microgravity and its effects on people in space crafts. [7M]

UNIT – II

3. (a) Illustrate with neat sketches the main components of the aircrafts which are common to almost all aircrafts and discuss the function of each of these components. [7M]
(b) Discuss the effect of camber on efficiency of airfoils. Explain with relevant graphs. [7M]
4. (a) Discuss with neat sketches the salient features of Bicycle and Multi-bogey forms of landing gear arrangement designs used in aircrafts. [7M]
(b) Enumerate the advantages and disadvantages of the different ways in which power plants (Engines) are located in aircrafts. [7M]

UNIT – III

5. (a) Explain in detail about [7M]
 - i. Turns.
 - ii. Side slips.
 - iii. Take-off.
 - iv. Landing.
 - v. Gliding flight.
- (b) Explain about different types of stabilizers in aircraft with help of neat sketches. [7M]

6. (a) What are the parameters pertaining to the performance of an aircraft? Discuss with respect to steady flight. [7M]
(b) Derive the mathematical expression for longitudinal static stability for forward tail configuration (canard wing configuration). [7M]

UNIT – IV

7. (a) Discuss the various components of an aircraft fuselage that are incorporated to take care of the different types of loads that the aircraft fuselage is subjected to. Illustrate the various components of the wing with a neat sketch. [7M]
(b) Explain the working of turbofan engine used in power aircrafts. Illustrate your answer with neat sketches. [7M]
8. (a) What are composite materials? Describe the applications of composite materials in recent aircrafts. [7M]
(b) With help of a neat diagram illustrate the various components and differences in the operation of ramjet and scram jet engines. [7M]

UNIT – V

9. (a) Describe in detail about the necessary components for satellite operation. [7M]
(b) Explain in detail the different stages of GSLV MK-III and explain different types of fuels used in the vehicle. [7M]
10. (a) Discuss about the environmental impact on spacecrafts? Explain with neat sketches. [7M]
(b) List out and discuss in detail various considerations in the design of space suits. [7M]

