INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)
Dundigal, Hyderabad - 500 043

AERONAUTICAL ENGINEERING

TUTORIAL QUESTION BANK

Course Name	**:**	**INTRODUCTION TO AEROSPACE ENGINEERING**
Course Code	**:**	**AAE001**
Regulation	**:**	**IARE –R16**
Class	**:**	**III Semester**
Branch	**:**	**Aeronautical Engineering**
Year	**:**	**2018– 2019**
Team of Instructors	**:**	**Ms. M Snigdha Assistant Professor, Dept of AE** **Ms .K Sai Priyanka Assistant Professor, Dept of AE**

COURSE OBJECTIVES

The course should enable the students to :

S No	Description
I	Understand the historical evolution of airplane and types of aircrafts along with exploration of space environment.
II	Discuss various aerodynamic forces acting on aircraft components and related principles.
III	Explain the performance and stability of aircraft for different mission segments of flight.
IV	Study the various types of satellite systems and subsystems with human exploration into space.

COURSE OUTCOMES:

Students, who complete the course, will be able to demonstrate the ability to do the following:

CAE001.01	Choose a concept or idea of technical real time problems to form solutions for the same.
CAE001.02	Understand, Identify, Study and comprehend processes that lead to solutions to a particular problem.
CAE001.03	Develop one- self to extend the outputs of research.
CAE001.04	Outline performance of the output of research, development, or design.
CAE001.05	Identify, solve new problems and gain new knowledge.
CAE001.06	Understand about the performance parameters, performance in steady flight, cruise, climb, range, endurance, accelerated flight symmetric maneuvers, turns, sideslips, takeoff and landing.
CAE001.07	Getting knowledge about the techniques to produce a safe, effective, economic final product.
CAE001.08	Understand the theoretical knowledge behind the design and development of aircrafts.
CAE001.09	Gain knowledge about the basic Aerodynamics, Flight mechanics and aircraft structures which are the foundation stones for knowledge based exams.
CAE001.10	Discuss the principle constituents of the transportation system involved in civil and commercial aircrafts and understanding the national and international regulations of the aviation organizations
CAE001.11	Extend the outputs of earlier research and discover good ideas for new products or improving current products.
CAE001.12	Memorize procedure and steps to keep the products working effectively
CAE001.13	Gain knowledge about the anatomy of aircraft, helicopters, satellites and other air vehicles, and about the working importance of each component in an air vehicle
CAE001.14	Ability to summarize the efficiency of the design in achieving the mission goal and safety of flight
CAE001.15	Estimate the performance parameters of the aircraft like stability and control.
CAE001.16	Discuss the different types of aircraft structures like monocoque and semi monocoque and also typical wing and fuselage structure.
CAE001.17	Understand the satellite system engineering and human space exploration with defined concepts.

S No	Question	Blooms Taxonomy Level	Course Outcomes
UNIT I			
HISTORY OF FLIGHT-THE AEROSPACE ENVIRONMENT			
PART – A (SHORT ANSWER QUESTIONS)			
1	Differentiate between Lighter and heavier than air flights.	Understand	CAE004.08
2	Write about first successful glider designed by OTTO.	Remember	CAE004.08
3	What do you understand by Van Allen belts?	Understand	CAE004.02
4	Name few personalities and discuss about their contribution towards the developments of aircraft.	Remember	CAE004.04
5	Write about WRIGHT FLYER I developed by the Wright Brothers and its configurations.	Understand	CAE004.08
6	Discuss the historical stages of aviation through 1000 B.C to 1250 A.D	Understand	CAE004.08
7	Differentiate between Monoplane and Bi-plane?	Understand	CAE004.02
8	Explain the concept of monoplane with neat sketch?	Remember	CAE004.02
9	Explain the concept of bi-plane with neat sketch?	Remember	CAE004.02
10	State the different space agencies which were involved in the evolution of Aircraft industry.	Understand	CAE004.02
11	Discuss how the evolution of aircraft contributed towards mankind?	Remember	CAE004.01
12	What are the different types of unconventional designs used in aircrafts?	Understand	CAE004.02
13	Explain about the vertical development of earth atmosphere?	Understand	CAE004.02
14	Discuss the historical stages of aviation through 1750 B.C to 1850 A.D	Remember	CAE004.02
15	Write in detail about PRE WRIGHT era.	Remember	CAE004.02
PART – B (LONG ANSWER QUESTIONS)			
1	Discuss about microgravity and its effects? Explain with example?	Understand	CAE004.02
2	Describe about earth's atmosphere? Explain with neat sketches?	Understand	CAE004.02
3	Describe the various stages of aircraft evolution? Explain with block diagram?	Remember	CAE004.08
4	Explain why biplanes were replaced by monoplane aircrafts?	Remember	CAE004.02
5	Explain briefly the impact of space exploration on mankind?	Remember	CAE004.08
6	What are Hot air balloons? Discuss their impact on the aeronautical history.	Understand	CAE004.08
7	Justify the year 1930 was considered to be "golden age of aviation"	Understand	CAE004.04
8	Write a short note on radioactive environment of earth? Explain with example?	Understand	CAE004.02
9	Explain the greatest success stories in the history of aircraft technology starting from Wright brothers.	Remember	CAE004.04
10	Discuss about the environmental impact on spacecrafts? Explain with neat sketches?	Remember	CAE004.02
11	Describe the social implications for the aerospace field as well as aerospace engineers?	Understand	CAE004.02
12	Describe three examples of the iterative design process shown in the decavitator project?	Understand	CAE004.02
13	Explain briefly about the different staged of historical ages in aviation industry?	Remember	CAE004.02
14	Discuss the advantages and disadvantages of microgravity? Explain in detail.	Remember	CAE004.02
15	Describe the environmental impact on spacecraft design? Explain in detail.	Remember	CAE004.02
PART- C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)			
1	Write about Sir George Cayley and about his experiments and contribution towards aeronautics.	Understand	CAE004.04
2	When did aviation become an industry? How did for-profit organizations affect the science of flight?	Remember	CAE004.04
3	How can you say that the idea of flying came from viewing the birds? And write in detail about the evolution of the idea.	Understand	CAE004.04
4	What is an ornithopter? Can ornithopters be called flying machines? Justify your answer.	Understand	CAE004.04

5	Discuss in detail about (a) Space mission (b) Space environment	Remember	CAE004.08
6	Give a brief out view of the history of aerospace industry? Explain with block diagram?	Remember	CAE004.10
7	Write in detail about (a) The commercial use of space. (b) b) Space debris.	Understand	CAE004.02
8	What are the effects that the spacecraft may experience in the space? Briefly explain these effects.	Understand	CAE004.08
9	Write in detail about the development of balloons during the 18^{th} century that flew in air and created history in lifting a human being off the ground.	Remember	CAE004.04
10	Write a short notes on (a) Troposphere (b) Stratosphere (c) Thermosphere	Understand	CAE004.02
11	Describe three examples of the iterative design process shown in the decavitator project?	Understand	CAE004.08
12	Explain in detail the contribution of Montgolfier's to the flight?	Understand	CAE004.08
13	What was the critical aerodynamic contribution that the wright brothers implemented in order to achieve the first heavier than air flight?	Remember	CAE004.08
14	Discuss the major contribution of European space agency to develop a space program?	Remember	CAE004.08
15	Explain in detail about planetary environments?	Remember	CAE004.08
UNIT II			
INTRODUCTION TO AERODYNAMICS			
PART – A (SHORT ANSWER QUESTIONS)			
1	Explain the terms (a) Lift (b) Drag (c) Thrust	Understand	CAE004.08
2	Explain basic principle on which lift is generated.	Understand	CAE004.08
3	Sketch the various parts of an airplane.	Remember	CAE004.13
4	Write about (a) Aerodynamic center (b) Center of pressure	Remember	CAE004.08
5	Draw a neat sketch of aerofoil and label its parts.	Understand	CAE004.08
6	What do you understand by the term "camber" explain its significance.	Remember	CAE004.08
7	Define wing loading and aspect ratio?	Understand	CAE004.08
8	What is the primary motive behind using the concept of swept wing of an aircraft?	Remember	CAE004.01
9	What do you understand by the term "Blended body design"?	Remember	CAE004.01
10	What is the role of a STOL aircraft?	Understand	CAE004.13
11	Does the rudder on an airplane allow the plane to pitch up and down?	Understand	
12	When an airplane in a steady flight, is the force of drag equal to the thrust produced by the plane?	Understand	CAE004.01
13	What are the different primary control surfaces?	Remember	CAE004.08
14	Define the functions of control surface called elevons?	Remember	CAE004.13
15	Does an airfoil create lift because there is a circulation over the airfoil?	Remember	CAE004.09
PART – B (LONG ANSWER QUESTIONS)			
1	Explain lift generating conditions? Explain with neat sketches?	Understand	CAE004.09
2	Discuss the various sources of drag and explain in detail about each type.	Remember	CAE004.09
3	Explain in detail Archimedes principal with relevant expression?	Remember	CAE004.09
4	Describe in detailed classification of air vehicles? Justify your answer.	Understand	CAE004.13
5	Explain briefly about Cl vs. α graph? Explain with neat sketches?	Remember	CAE004.09

6	Describe briefly the conventional and unconventional methods of empennage Arrangement.	Remember	CAE004.14
7	Explain about maximum lift to drag ratio? Justify your answer.	Understand	CAE004.09
8	Discuss theory of boundary layer separation with help of a neat sketch.	Understand	CAE004.11
9	What is meant by High-lift device? Explain the different high lift devices.	Remember	CAE004.08
10	What are the different control surfaces that can be incorporated on the aircraft?	Remember	CAE004.08
11	Explain in detail about airfoil fins? Explain with neat sketches?	Remember	CAE004.13
12	What are the aerodynamic forces that are developed on an aircraft wing?	Remember	CAE004.01
13	List out the various types of moments on an air vehicle.	Understand	CAE004.09
14	What is Magnus effect? State few applications of this effect.	Understand	CAE004.08
15	Explain the relation between lift and angle of attack? Explain with relevant graph?	Understand	CAE004.13
PART- C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)			
1	Write short notes on (a) Angle of attack. (b) Angle of incidence. (c) Center of pressure.	Understand	CAE004.11
2	Explain in detail about how an aircraft and a helicopter will fly and compare the way a helicopter and an aircraft flies.	Remember	CAE004.14
3	Discuss in detail about drag polar curve? How will velocity influence Cl, explain with help of drag polar curve.	Remember	CAE004.09
4	Write in detail about (a) NACA 4 digit series aerofoil. (b) NACA 5 digit series aerofoil. (c) NACA 6 digit series aerofoil.	Understand	CAE004.11
5	Draw a neat sketch of (a) Aircraft and label its parts and write down about functions of each part. (b) Helicopter and label its parts and write down about functions of eachpart.	Understand	CAE004.13
6	Write about: (a) Stream lines. (b) Wash in and wash out for wings. (c) Effect of smoothness of a surface on aerodynamic forces.	Remember	CAE004.11
7	(a) Define Mach number. Explain the classification of flow regimes based on mach number. (b) Write short notes on compressibility? Explain with example?	Remember	CAE004.09
8	Write short notes on (a) Coefficient of lift. (b) Coefficient of Drag.	Understand	CAE004.11
9	What are High lift devices? Describe a typical leading edge high lift device control system.	Understand	CAE004.13
10	What are winglets? Explain the need of using winglets in an aircraft?	Remember	CAE004.13
11	Explain lift on an airfoil in the context of Bernoulli's equation. State all the assumptions?	Remember	CAE004.08
12	Discuss the effect of Reynolds number on lift and drag curves? Explain with neat sketches?	Remember	CAE004.09
13	What are the different types of drag that are induced on an airfoil?	Understand	CAE004.11
14	List out the advantages and disadvantages of winglets?	Understand	CAE004.13
15	Discuss the effect of camber on symmetrical and cambered airfoils? Explain with relevant graphs?	Understand	CAE004.11
UNIT III			
FLIGHT VEHICLE PERFORMANCE AND STABILITY			
PART - A (SHORT ANSWER QUESTIONS)			
1	Discuss performance in steady flight vehicle.	Understand	CAE004.14
2	Write a short note on term CRUISE.	Understand	CAE004.06
3	Define static stability and dynamic stability.	Remember	CAE004.14
4	What do you understand by the term CLIMB?	Understand	CAE004.06

5	Explain about the parameters which influence the performance of an aircraft.	Remember	CAE004.06
6	Discuss about the term Range in terms of aeronautics.	Understand	CAE004.06
7	Write about different maneuvers of an aircraft.	Remember	CAE004.14
8	Write a short note on ENDURANCE.	Understand	CAE004.06
9	What do you understand by the term accelerated flight condition?	Remember	CAE004.06
10	List the key components of an aircraft in a neat sketch.	Understand	CAE004.05
11	Write short notes on DESCENT?	Understand	CAE004.14
12	Draw the mission profile for an aircraft?	Remember	CAE004.06
13	What are the different types of stability which affects the aircraft?	Remember	CAE004.14
14	List out the aircraft configurations which are having forward tail?	Understand	CAE004.05
15	Write about performance of an aircraft under steady flight condition.	Remember	CAE004.06
	PART - B (LONG ANSWER QUESTIONS)		
1	What do you understand by Accelerated flight and stable flight?	Understand	CAE004.06
2	What do you understand by the term stalling? Discuss in detail about stall speed.	Remember	CAE004.05
3	Explain briefly the effect of maximum lift to drag ratio.	Remember	CAE004.11
4	Derive mathematical expression for Breguet range equation?	Understand	CAE004.14
5	Explain the concept of accelerated flight symmetric maneuvers.	Understand	CAE004.06
6	Discuss the concept of longitudinal and lateral stabilities of an aircraft?	Remember	CAE004.14
7	Explain briefly about handling qualities of the airplanes?	Remember	CAE004.06
8	Explain different conditions for flight vehicle stability? explain with example?	Understand	CAE004.14
9	List the basic assumptions made in deriving the equations of motion for an Aircraft.	Understand	CAE004.09
10	Explain about different types of stabilizers in aircraft with help of neat sketches.	Understand	CAE004.11
11	Derive the mathematical expression for pull-down -maneuvers? Explain in detail.	Remember	CAE004.06
12	Formulate the expression for accelerated and un accelerated climb for conventional aircraft?	Understand	CAE004.08
13	Derive the expression for accelerated and un accelerated cruise for conventional aircraft?	Remember	CAE004.07
14	Obtain the expression for accelerated and un accelerated descent for conventional aircraft?	Remember	CAE004.10
15	Derive the expression for accelerated and un accelerated banking for conventional aircraft?	Understand	CAE004.07
	PART- C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)		
1	Compare steady and accelerated flights of an aircraft, mentioning the governing equations.	Understand	CAE004.06
2	What are the parameters pertaining to the performance of an aircraft? Discuss with respect to steady flight.	Remember	CAE004.14
3	Obtain an expression for the correction applied to the rate of climb in troposphere flight.	Remember	CAE004.06
4	Explain in detail about (a) Turns. (b) Side slips. (c) Take-off. (d) Landing. (e) Gliding flight.	Understand	CAE004.14
5	Discuss in detail about: (a) Stability of a rigid body in general. (b) Stability of an aircraft.	Understand	CAE004.06
6	What are the criteria for longitudinal static stability of an aircraft? Explain with neat sketches?	Understand	CAE004.06
7	Explain different types of maneuvers used in flight vehicle performance?	Remember	CAE004.06
8	List out various types performance and stability conditions. Discuss its working Principle briefly.	Understand	CAE004.09
9	Write down the difference between Lateral motion, Longitudinal motion and directional motion with help of neat sketches.	Remember	CAE004.06

10	Write a short notes on (a) Static stability. (b) Directional stability.	Understand	CAE004.06
11	Explain in detail the primary purpose of the control surfaces?	Remember	CAE004.09
12	Derive the mathematical expression for longitudinal static stability for forward tail configuration (canard wing configuration)?	Understand	CAE004.10
13	Obtain the mathematical expression for pull-up-maneuvers? Explain in detail.	Remember	CAE004.11
14	What are the control surfaces and controls used for performing coordinated turn? Explain in detail?	Understand	CAE004.07
15	Derive the mathematical expression for each segment of coordinated turn? Explain in detail?	Understand	CAE004.05
UNIT IV			
INTRODUCTION TO AIRPLANE STRUCTURES AND MATERIALS, POWER PLANTS			
PART - A (SHORT ANSWER QUESTIONS)			
1	What are the types of fuselage constructions?	Understand	CAE004.13
2	Write about working of SCRAM jet engine?	Understand	CAE004.09
3	Explain different components of wing construction.	Remember	CAE004.13
4	Classify different materials used in manufacturing of aircraft.	Understand	CAE004.14
5	List out the different types of non metallic materials used in constructing an aircraft structure ?	Remember	CAE004.11
6	What are the types of engines used in aircrafts?	Understand	CAE004.13
7	Explain about types of composite materials.	Understand	CAE004.11
8	Write working principle of aircraft engines.	Remember	CAE004.09
9	What is a rocket and state working principle of rockets?	Understand	CAE004.11
10	Name different types of rockets.	Remember	CAE004.13
11	Explain the term monocoque?	Understand	CAE004.12
12	List out the different types of metallic materials used in constructing an aircraft structure?	Remember	CAE004.14
13	Discuss the applications of aluminum alloys in aircraft industries.	Understand	CAE004.11
14	Derive an expression for rocket equation?	Remember	CAE004.09
15	Explain the terms LEVEL TURN for an accelerated flight?	Understand	CAE004.08
PART – B (LONG ANSWER QUESTIONS)			
1	Explain how a material has to be chosen for manufacturing of an aircraft wing.	Remember	CAE004.07
2	Describe the basic concept of a composite structure? Explain with neat sketches?	Understand	CAE004.14
3	What are different kinds of rockets and state mission for each type of the rocket?	Understand	CAE004.11
4	Explain advantages and disadvantages of different types of Composite materials?	Understand	CAE004.11
5	Write about properties of Duralumin and its applications in aircraft industry?	Remember	CAE004.07
6	Describe about the applications of composite materials in recent aircrafts.	Understand	CAE004.11
7	Classify aircraft engines and describe briefly about each type of engine.	Remember	CAE004.07
8	Explain about different parts of a rocket with help of a neat diagram.	Understand	CAE004.13
9	What are the difference between Turbo prop and turbo fan engines with diagrams.	Remember	CAE004.07
10	State alloying elements of Steel and discuss the mechanical properties.	Understand	CAE004.14
11	Describe the basic properties of aluminum alloys used in airplane wing structures?	Remember	CAE004.07
12	Explain in detail the semi monocoque wing and tail construction with help of diagrams?	Understand	CAE004.13
13	With basic principle explain about the jet engines for thrust production in for high speed aircraft?	Remember	CAE004.12
14	Discuss about the liquid rocket engine with neat sketch?	Understand	CAE004.11
15	Distinguish between liquid propellant rocket engine and solid propellant rocket motor?	Remember	CAE004.08

PART– C (PROBLEM SOLVING AND CRITICAL THINKING)			
1	Explain the difference in construction of monocoque and semi monocoque fuselage construction with help of diagrams.	Understand	CAE004.14
2	Explain different components of aircraft wing with help of diagram and explain about the types load bared by each component.	Understand	CAE004.09
3	Write about properties of aluminum alloys and their applications in aircraft manufacturing.	Remember	CAE004.09
4	Explain clearly components of turbo prop, Turbo jet and Turbo fan engines with help of neat diagrams.	Remember	CAE004.14
5	Discuss about different types of air breathing engines and non air breathing engines used in aircrafts.	Remember	CAE004.14
6	State applications of Aluminum, steel, and titanium in aircraft manufacturing and specify which material is suitable for which part of the aircraft.	Understand	CAE004.11
7	Write about Ribs, Spars and Stringers and their uses and the stress that each part needs to carry.	Understand	CAE004.13
8	Classify types of materials used in aircraft manufacturing and discuss the mechanical properties of these materials.	Remember	CAE004.07
9	Write about different types of rocket engines and different types of fuels used in rocket engines.	Understand	CAE004.14
10	What are the materials used in manufacture of fuselage components and explain which material properties are preferred for manufacturing of fuselage components	Remember	CAE004.01
11	Describe about air breathing engines types with neat sketches and give its basic principle of working?	Understand	CAE004.01
12	With neat sketch detail about the rocket principles and operation of liquid and solid rocket engines?	Remember	CAE004.02
13	Illustrate the use of propeller for thrust production in aircraft engines? explain in detail?	Understand	CAE004.06
14	What are the recent trends in aircraft materials for civil aircraft production and how it influences the market?	Remember	CAE004.11
15	Distinguish between metallic and non-metallic materials used for aircraft applications?	Understand	CAE004.13
UNIT V			
SATELLITE SYSTEMS ENGINEERING HUMAN SPACE EXPLORATION			
PART - A (SHORT ANSWER QUESTIONS)			
1	List out Indian launch vehicles which are successful in space missions?	Understand	CAE004.11
2	Write short notes on power systems of satellite.	Remember	CAE004.07
3	Discuss about mechanisms of a satellite.	Understand	CAE004.14
4	Define thermal control.	Understand	CAE004.08
5	Write about the materials used in satellite system.	Remember	CAE004.07
6	Explain about Apollo space mission.	Understand	CAE004.11
7	Describe about extra vehicular activity.	Remember	CAE004.08
8	Write about data storage center operations	Understand	CAE004.08
9	What do you understand by the term ‘Design of mission’?	Remember	CAE004.11
10	Write a short note on “Space shuttle as a part of Satellite deployment”	Remember	CAE004.08
11	What do you meant by station keeping and how it is performed?	Understand	CAE004.09
12	Discuss the operation of satellite system? Explain with example?	Remember	CAE004.10
13	List out some examples about real life space missions?	Understand	CAE004.11
14	Expand the full form for EMU and HUT?	Understand	CAE004.12
15	What are the different types of missiles and explain their mission profile?	Remember	CAE004.13
PART - B (LONG ANSWER QUESTIONS)			
1	List out and discuss in detail design considerations of the advanced space suit considerations.	Understand	CAE004.02
2	What is propulsion and station keeping in satellites and justify their need?	Remember	CAE004.02
3	Explain in detail the different stages of PSLV C-28 and explain different types of fuels used in the vehicle?	Remember	CAE004.08
4	What are the different types of space missions? Explain in detail.	Understand	CAE004.11

5	How power systems and satellite bus subsystems are used? Explain in detail.	Remember	CAE004.07
6	Why space debris is becoming an ever-increasing problem. (a) Discuss two current solutions. (b) Develop your own creative solution and discuss.	Understand	CAE004.11
7	What is a Attitude determination and control? Explain in detail.	Remember	CAE004.05
8	Describe in detail about the flight safety and life support in space sketches.	Remember	CAE004.11
9	Explain in detail about the concept of space mission objectives?	Understand	CAE004.08
10	Distinguish between missile technology and space technology? Explain in detail.	Understand	CAE004.08
11	Explain in detail the different stages of GSLV MK-III and explain different types of fuels used in the vehicle?	Remember	CAE004.09
12	Describe in detail about upcoming hypersonic missiles developed by different nations?	Understand	CAE004.05
13	Discuss the concept of communication and telemetry systems of a satellite.	Remember	CAE004.06
14	Describe in detail about perturbations occurred for an satellite and what are the steps taken to regain the original path?	Understand	CAE004.05
15	Explain in detail about the mission profile of anti-tank missile?	Remember	CAE004.07
PART- C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)			
1	Explain about different types of propulsion modules used for launch vehicles and satellites?	Understand	CAE004.11
2	Briefly describe the effect of the solar wind on Earth's magnetosphere.	Understand	CAE004.11
3	What is operational satellite system; explain in brief about operational Satellite system?	Remember	CAE004.14
4	What do you understand by the term human space exploration; write in detail about human space exploration?	Remember	CAE004.11
5	Write the differences between national and international space missions configuration.	Understand	CAE004.13
6	What are insulating and plating processes? Explain the need for insulating and Plating the satellite components. Cite a few examples.	Remember	CAE004.02
7	Write short notes on the Skylab, Apollo-Soyuz, and Space Shuttle.	Understand	CAE004.14
8	Explain in detail about reusable launch vehicle developed by different nations?	Remember	CAE004.11
9	Write a short note on command and control center operations.	Understand	CAE004.14
10	Formulate the equations of motion for ballistic reentry module from an altitude of 100 km?	Remember	CAE004.11
11	Explain about tether mechanism and YO-YO mechanism for stabilizing satellite from perturbations?	Understand	CAE004.09
12	Write about Apollo human spaceflight program? Explain in detail.	Remember	CAE004.08
13	All spacecrafts will eventually come down and re-enter atmosphere – yes or no justify.	Understand	CAE004.07
14	Write about the Indian effort in aviation, missile and space technology.	Remember	CAE004.06
15	Obtain the equations of motion for lifting reentry module from an altitude of 100 km?	Understand	CAE004.07

Prepared By: Ms. M Snigdha, Assistant Professor

Ms .K Sai Priyanka, Assistant Professor

HOD, AE