



# INSTITUTE OF AERONAUTICAL ENGINEERING (Autonomous)

Dundigal, Hyderabad - 500 043

## AERONAUTICAL ENGINEERING

### TUTORIAL QUESTION BANK

Course Name	:	AIRCRAFT PRODUCTION TECHNOLOGY
Course Code	:	AAEB16
Regulation	:	IARE - R18
Year	:	2019 – 2020
Class	:	B. Tech V Semester
Branch	:	Aeronautical Engineering
Team of Instructors	:	Mr. R. Suresh Kumar, Assistant Professor

#### COURSE OBJECTIVES :

The course should enable the students to:

S. No	Description
I	Study the composition of microstructures of metals and alloys with their applications in aerospace industry.
II	Discuss the various manufacturing processes and selection of process for suitable applications
III	Understand the working principles and applications of conventional and unconventional machining alongwith their advantages and disadvantages.
IV	Demonstrate the importance of composites with their applications in different areas of aerospace industry

#### COURSE OUTCOMES (COs):

Students, who complete the course, will have demonstrated the ability to do the following:

CO 1	Demonstrate different type of materials used in aircraft industry and study its properties
CO 2	Understand the process of casting and inspection techniques used for production.
CO 3	Explain sheet metal operations and its tooling operations used for aircraft industry.
CO 4	Gain knowledge about the basic convectional and unconventional Machining
CO 5	Understand the importance of composites and its manufacturing process.

#### COURSE LEARNING OUTCOMES (CLOs)

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

AAEB16.01	Choose a concept or idea of technical real time problems to form solutions for the same.
AAEB16.02	Understand, Identify, Study and comprehend processes that lead to solutions to a particular production.
AAEB16.03	Develop one- self to extend the outputs of research.
AAEB16.04	Outline performance of the output of research, development or design.
AAEB16.05	Identify, solve new problems and gain new knowledge.
AAEB16.06	Understand about the turning, milling, grinding and drilling of a specimen.

AAEB16.07	Getting knowledge about the techniques to produce a safe, effective, economic final product.
AAEB16.08	Understand the theoretical knowledge behind the design and development of aircraft
AAEB16.09	Gain knowledge about the basic convectional, unconventional riveting and welding for knowledge based exams.
AAEB16.10	Discuss the principle of advanced materials and what factors drive to develop the composite materials.
AAEB16.11	Extend the outputs of earlier research and discover good ideas for new products or improving current products.
AAEB16.12	Memorize procedure and steps to keep the products working effectively.
AAEB16.13	Gain knowledge about what materials used to manufacture e of each component in an aircraft.
AAEB16.14	Ability to summarize the efficiency of the product development in achieving the mission goal and safety of flight.
AAEB16.15	Ability to summarize the efficiency of the safety of flight

### TUTORIAL QUESTION BANK

#### MODULU - I

#### AIRCRAFT ENGINEERING MATERIALS

#### PART - A (SHORT ANSWER QUESTIONS)

S No	QUESTIONS	Blooms Taxonomy Level	Course Outcomes	Course Learning Outcomes
1	Define the term materials? List eight commonly encountered engineering materials.	Remember	CO 1	AAEB16.01
2	Explain the main classes of engineering materials?	Understand	CO 1	AAEB16.02
3	Mention some of the important properties of each of these engineering materials?	Understand	CO 1	AAEB16.02
4	Define is modulus of elasticity?	Understand	CO 1	AAEB16.02
5	Define an alloy and mention most popular alloys in aircraft manufacturing.	Understand	CO 1	AAEB16.03
6	Define phase and mention most popular alloys in aircraft manufacturing.	Understand	CO 1	AAEB16.02
7	Define Eutectic system.	Understand	CO 1	AAEB16.04
8	Define Partial eutectic system.	Remember	CO 1	AAEB16.04
9	Define Peritectic system.	Remember	CO 1	AAEB16.04
10	Sketch a Monotectic system. Explain the basic parts of it?	Remember	CO 1	AAEB16.04
11	Explain the term is Critical Temperature?	Understand	CO 1	AAEB16.02
12	Define cooling curve. With neat sketch discuss about its parts?	Understand	CO 1	AAEB16.02
13	Draw the stages of structures from Solid to Liquid formation in binary system?	Remember	CO 1	AAEB16.02
14	Give examples of non-ferrous materials?	Understand	CO 1	AAEB16.02
15	Explain corrosion? Write down the chemical equation involved in it.	Understand	CO 1	AAEB16.03
16	How we can protect material from corrosion?	Remember	CO 1	AAEB16.02
17	Define the term annealing? Quote some of the applications.	Remember	CO 1	AAEB16.04

18	Define the term Quenching? Quote some of the applications.	Understand	CO 1	AAEB16.04
19	Define the term normalizing? Quote some of the applications.	Remember	CO 1	AAEB16.02
20	Explain the process of heat treatment of a material?	Remember	CO 1	AAEB16.04

### **PART - B (LONG ANSWER QUESTIONS)**

1	Explain allotropic forms of iron and give lattice structure of each. Draw the neat diagrams of the structures?	Remember	CO 1	AAEB16.03
2	Define ferrite, pearlite, and austenite. What are the applications of them?	Remember	CO 1	AAEB16.02
3	What is Peritectic reaction and explain with diagram? Write down the applications of them?	Remember	CO 1	AAEB16.01
4	What is eutectic reaction in iron –carbide system and explain with neat diagram?	Understand	CO 1	AAEB16.01
5	Explain various phase reactions in iron-iron carbide system?	Understand	CO 1	AAEB16.02
6	Explain eutectoid reaction with neat sketch. What are the applications of them?	Remember	CO 1	AAEB16.02
7	Explain hyper eutectoid steels. What are the applications of them?	Remember	CO 1	AAEB16.04
8	Explain hypo euctoid steels .What are the applications of them?	Remember	CO 1	AAEB16.04
9	Draw continuous transformation curves and explain the terms in it?	Remember	CO 1	AAEB16.04
10	Explain annealing heat treatment and describe where annealing is practically applicable?	Remember	CO 1	AAEB16.04
11	Explain normalizing describe where normalizing is practically applicable?	Remember	CO 1	AAEB16.03
12	Explain hardening and tempering. What are the changes which happen in the properties of materials?	Remember	CO 1	AAEB16.02
13	Explain mar tempering .What are the changes which happen in the properties of materials?	Understand	CO 1	AAEB16.01
14	Classify stainless steels. What are the changes which happen in the properties of materials?	Understand	CO 1	AAEB16.03
15	Explain properties and applications of austenitic stainless steels. What are the changes which happen in the properties of materials?	Understand	CO 1	AAEB16.02
16	What is corrosion and what are reasons to occur corrosion of material?	Understand	CO 1	AAEB16.01
17	Discuss titanium alloy can be classified? What are the special properties of titanium?	Understand	CO 1	AAEB16.03
18	What is Structure of copper and its property? With neat sketch explain the structure of copper?	Remember	CO 1	AAEB16.02
19	Explain heat treatment of an aluminum alloy? How aluminum alloys play an important role in aeronautical firm?	Remember	CO 1	AAEB16.01
20	Mention the protective treatments available to prevent corrosion? Which is the cheapest and most efficient protective method?	Remember	CO 1	AAEB16.03

### **PART - C (PROBLEM SOLVING AND CRITICAL THINKING QUESTIONS)**

1	Explain the term allotropy in iron? Draw iron-carbon phase diagram and mention all reactions clearly?	Understand	CO 1	AAEB16.01
2	Explain clearly ferrite, austenite, martensite and cementite. And compare all the states.	Remember	CO 1	AAEB16.01
3	What is heat treatment? Explain clearly heat treatment of aluminum alloy with neat iron-carbon phase diagram?	Remember	CO 1	AAEB16.01
4	Define quenching? Explain clearly heat treatment of steel alloy with neat iron-carbon phase diagram?	Remember	CO 1	AAEB16.01
5	Explain clearly heat treatment of titanium alloy with neat iron-carbon phase diagram?	Understand	CO 1	AAEB16.03
6	What is annealing heat treatment process explain clearly with one material?	Remember	CO 1	AAEB16.02

7	Compare annealing and hardening. Explain how the microstructure of the vehicle is varied by it?	Understand	CO 1	AAEB16.04
8	Compare annealing and normalizing. Explain how the microstructure of the vehicle is varied by it?	Remember	CO 1	AAEB16.04
9	How corrosion can be prevented? And explain it with using one method?	Understand	CO 1	AAEB16.04
10	State difference between surface hardening and case hardening clearly?	Understand	CO 1	AAEB16.04

## MODULU - II

### CASTING, WELDING AND INSPECTION TECHNIQUES

#### **PART - A (SHORT ANSWER QUESTIONS)**

1	Write various steps involved in casting.	Remember	CO 2	AAEB16.04
2	What is the purpose of Core?	Understand	CO 2	AAEB16.04
3	Describe briefly fundamental found production methods.	Understand	CO 2	AAEB16.04
4	When will you use permanent mould casting?	Understand	CO 2	AAEB16.04
5	Define the production and explain how it is important in aircraft manufacturing.	Remember	CO 2	AAEB16.04
6	State the classification of manufacturing process along with its applications.	Remember	CO 2	AAEB16.04
7	Define Welding? What are the different types of welding process? Explain their applications?	Remember	CO 2	AAEB16.04
8	What is the permanent mould a die casting mould?	Remember	CO 2	AAEB16.04
9	Write the bending equation of a simple beam	Remember	CO 2	AAEB16.04
10	What is the use of electrodes? Classify it.	Remember	CO 2	AAEB16.04
11	Classify the types of welding.	Remember	CO 2	AAEB16.04
12	Write the principle of arc welding.	Remember	CO 2	AAEB16.04
13	Describe briefly fundamental sheet metal instruments.	Remember	CO 2	AAEB16.04
14	What is difference between bending and shearing	Remember	CO 2	AAEB16.04
15	What is the use of electrodes? Classify it.	Remember	CO 2	AAEB16.04

#### **PART - B (LONG ANSWER QUESTIONS)**

1	In general Aviation industry what is the importance of casting and molding.	Remember	CO 2	AAEB16.06
2	Define the terms: Sprue, Gate, Drag and Parting line. With a neat sketch mark the parts.	Remember	CO 2	AAEB16.05
3	With help of neat sketch diagram explain the investment casting. Elaborate the applications of this casting.	Remember	CO 2	AAEB16.05
4	A Write the advantages and disadvantages of shell molding. Elaborate the applications of this casting.	Remember	CO 2	AAEB16.05
5	Write the classifications of centrifugal casting. Elaborate the applications of this casting.	Remember	CO 2	AAEB16.06
6	List the advantages and disadvantages of welding process. What welding is used to join hard materials?	Remember	CO 2	AAEB16.06
7	Define the principle of soldering technique. Where soldering is applicable. Write about soldering materials and metals?	Remember	CO 2	AAEB16.05
8	Define the principle of brazing technique. Where brazing is applicable. Write about brazing materials and metals?	Remember	CO 2	AAEB16.05
9	Briefly explain the working principle of resistance welding and write advantages and disadvantages.	Remember	CO 2	AAEB16.05

10	Explain the working principle of arc welding equipment and write advantages and disadvantages.	Understand	CO 2	AAEB16.05
11	Principles and equipment used in arc welding, gas welding, resistance welding, Thermite welding, recent advances in welding technology, Soldering and brazing techniques.	Remember	CO 2	AAEB16.04
12	Classify types of nondestructive tests. Explain about the ultrasonic testing and X-ray testing along with neat sketch	Remember	CO 2	AAEB16.04
13	Discuss clearly the difference between Nondestructive test and destructive test. Why NDT is so crucial in the production and manufacturing process.	Understand	CO 2	AAEB16.04
14	Discuss about the penetrates used in Dye casting. What are the limitations of dye casting?	Remember	CO 2	AAEB16.04
15	Explain clearly the working principle of magnetic particle inspection technique.	Understand	CO 2	AAEB16.04

**PART – C (PROBLEM SOLVING AND CRITICAL THINKING)**

1	Describe the centrifugal casting process and what work piece configurations.	Apply	CO 2	AAEB16.06
2	Write the definition of casting and what are the steps involved in the process.	Remember	CO 2	AAEB16.06
3	Explain the types under shell molding process. Why shell molding is a crucial process. What are the applications of it?	Remember	CO 2	AAEB16.06
4	Principles and equipment used in arc welding, gas welding, resistance welding, Thermite welding, recent advances in welding technology, Soldering and brazing techniques.	Understand	CO 2	AAEB16.05
5	Give a short note and working principle of arc welding equipment and write advantages and disadvantages.	Remember	CO 2	AAEB16.05
6	Principles and equipment used in arc welding, gas welding, resistance welding, Thermite welding, recent advances in welding technology, Soldering and brazing techniques.	Understand	CO 2	AAEB16.05
7	Explain clearly the principle in gas welding with neat sketch? Explain about the carburizing neutral and oxidizing flame?	Remember	CO 2	AAEB16.05
8	What are the main differences between MIG, TIG and PIG welding techniques? Explain where plasma welding is applicable?	Remember	CO 2	AAEB16.06
9	Give a short note on Dye penetration test procedure with all steps involved clearly?	Remember	CO 2	AAEB16.05
10	What is the main working principle of MPI and clearly give a note on how to inspect the welded specimen?	Understand	CO 2	AAEB16.05
11	What is the principle behind Ultrasonic testing and how it works?	Remember	CO 2	AAEB16.05
12	What are main applications of each NDT test with an example?	Remember	CO 2	AAEB16.05

**MODULU - III**

**SHEET METAL PROCESSES IN AIRCRAFT INDUSTRY**

**PART - A (SHORT ANSWER QUESTIONS)**

1	What is advance metal forming process?	Understand	CO 3	AAEB16.09
2	List the tool used in sheet metal.	Understand	CO 3	AAEB16.09
3	State the sheet metal materials and tools.	Remember	CO 3	AAEB16.09
4	Discuss the principle of shearing operation.	Understand	CO 3	AAEB16.09
5	Explain punching operations.	Remember	CO 3	AAEB16.09
6	Explain automation in bending.	Remember	CO 3	AAEB16.09
7	Sketch and explain bending in single plane.	Understand	CO 3	AAEB16.09

8	Sketch different types of rivets?	Remember	CO 3	AAEB16.11
9	Discuss limitations of riveting operations?	Understand	CO 3	AAEB16.11
10	Why riveting technique is so important in aircraft industry?	Remember	CO 3	AAEB16.11
11	Differentiate between solid riveting and blind riveting?	Remember	CO 3	AAEB16.11

**PART – B (LONG ANSWER QUESTIONS)**

1	Briefly give a note on below operations Punching and Blanking? Write down the applications and advantages of these?	Remember	CO 3	AAEB16.09
2	Why is blank holding necessary in a sheet metal drawing operation? Give the difference between Punching & Blanking	Understand	CO 3	AAEB16.09
3	Briefly give a note on below operations Drawing and Cupping. Write down the applications and advantages of these?	Remember	CO 3	AAEB16.09
4	Bring out the differences between bending and shearing.	Remember	CO 3	AAEB16.09
5	List the tool used in sheet metal. Write down the applications and advantages of these?	Remember	CO 3	AAEB16.09
6	List the different types of bending operation. Write down the applications and advantages of these?	Remember	CO 3	AAEB16.09
7	Write a shot note on bending in single plane. Write down the applications and advantages of these?	Understand	CO 3	AAEB16.09
8	Write the different types of holding devices. Write down the applications and advantages of these?	Understand	CO 3	AAEB16.09

9	Discuss Riveting operation. Write down the applications and advantages of these?	Remember	CO 3	AAEB16.11
10	Discuss limitations of riveting technique? Write down the applications and advantages of these?	Understand	CO 3	AAEB16.11
11	Classify types of riveting tools used Write down the applications and advantages of these?	Remember	CO 3	AAEB16.11
12	What are the main types of riveting heads? Write down the applications and advantages of these?	Remember	CO 3	AAEB16.11
13	What is the main difference between Daly and Snappy Write down the applications and advantages of these?	Remember	CO 3	AAEB16.11
14	What type of hammer used in riveting technique and why? Write down the applications and advantages of these?	Understand	CO 3	AAEB16.11
15	Discuss the steps involved in drilling operation while riveting to be made?	Remember	CO 3	AAEB16.11

**PART – C (PROBLEM SOLVING AND CRITICAL THINKING)**

1	Explain the operation of stretch forming and drawing. With neat sketches explain the bending and shearing operations?	Remember	CO 3	AAEB16.10
2	Explain the tools used in shearing operation. With neat sketches explain the bending and shearing operations?	Understand	CO 3	AAEB16.09
3	Explain the tools used in drop stamp forming. With neat sketches explain the bending and shearing operations?	Remember	CO 3	AAEB16.09
4	A beam is loaded as shown in the figure Evaluate deflection of beam by Moment Area method?	Remember	CO 3	AAEB16.09

5	Bring out the differences between bending and shearing. With neat sketches explain the bending and shearing operations?	Remember	CO 3	AAEB16.10
6	Why is blank holding necessary in a sheet metal drawing operation? Give the difference between Punching & Blanking?	Remember	CO 3	AAEB16.10
7	Elaborate about the operations Punching, Blanking, and Drawing Cupping?	Remember	CO 3	AAEB16.10
8	Explain why riveting so important in aircraft industry even though fasteners are playing main role?	Understand	CO 3	AAEB16.10



9	Discuss what are the advantages over welding operation? Explain the temperatures generated during the welding?	Remember	CO 3	AAEB16.10
10	What are the steps include in riveting operation and clearly explain? Explain the temperatures generated during the welding?	Remember	CO 3	AAEB16.10
<b>MODULU - IV</b>				
<b>CONVENTIONAL AND UNCONVENTIONAL MACHINING PROCESSES</b>				
<b>PART – A (SHORT ANSWER QUESTIONS)</b>				
1	Define machining. Differentiate between machining and welding.	Remember	CO 4	AAEB16.07
2	Why lathe machine is called universal machining machine?	Understand	CO 4	AAEB16.07
3	What is the difference between milling and surface grinding	Understand	CO 4	AAEB16.07
4	Classify the different types of cutting tools used in all types of machining operations?	Remember	CO 4	AAEB16.07
5	What is unconventional machining process? Discuss advantages.	Remember	CO 4	AAEB16.07
6	What are the different types of mechanisms used in unconventional material removal processes?	Understand	CO 4	AAEB16.09
7	What is the mechanism behind Abrasive Jet Machining?	Understand	CO 4	AAEB16.09
8	Define LASER and explain where it is used in manufacturing?	Understand	CO 4	AAEB16.09
9	Explain working principle of thermally material removal?	Understand	CO 4	AAEB16.09
10	Give list of abrasive particles used for Abrasive Jet Machining?	Understand	CO 4	AAEB16.09
11	What is the purpose of dielectric used in Electron Discharge Machining?	Remember	CO 4	AAEB16.07
12	Where anode and cathode to connect for working of Electron Discharge Machining?	Remember	CO 4	AAEB16.07
13	What is plasma and explain how can it be produced?	Remember	CO 4	AAEB16.07
14	How chemical mechanism of material removal works?	Remember	CO 4	AAEB16.07
15	What is difference between position of cutting tool in both unconventional and conventional machining operation?	Remember	CO 4	AAEB16.07
<b>PART – B (LONG ANSWER QUESTIONS)</b>				
1	Sketch Lathe machine neatly and label all the important parts?	Remember	CO 4	AAEB16.08
2	Why cutting tool should be harder than work piece and justify it with an example?	Remember	CO 4	AAEB16.08
3	What is the main difference between Milling and Surface grinding?	Remember	CO 4	AAEB16.08
4	How “V” grooves to be performed on flat work piece explain clearly?	Remember	CO 4	AAEB16.08
5	What type of cutting tool used in Milling machine and why?	Understand	CO 4	AAEB16.08
6	Define Feed and depth of cut.	Understand	CO 4	AAEB16.08
7	What are the advantages of unconventional machining over conventional machining? And list down applications?	Remember	CO 4	AAEB16.08
8	What is the mechanism of material removal for USM, explain it with working principle?	Remember	CO 4	AAEB16.08
9	List down the applications of Laser Beam Machining and Electron Beam Machining?	Remember	CO 4	AAEB16.08
10	How Electric Discharge Machining will work and list down some electrodes and dielectric used?	Remember	CO 4	AAEB16.08
11	Explain the basic working principle of Electro Chemical Machining?	Understand	CO 4	AAEB16.08

12	What is plasma? How Plasma Arc Machine will work?	Remember	CO 4	AAEB16.09
<b>PART – C (PROBLEM SOLVING AND CRITICAL THINKING)</b>				
1	Discuss the working principle of Lathe with neat sketch? Explain the functions of the important parts of lathe.	Remember	CO 4	AAEB16.09
2	What is the working principle of Milling with neat sketch?	Remember	CO 4	AAEB16.09
3	Explain clearly with CNC machine and advantages of CNC over manual machining?	Understand	CO 4	AAEB16.08
4	How Shaping Machine will work and what is the main application to operate shaper?	Remember	CO 4	AAEB16.09
5	What is Electric Discharge Machining? When do you use reverse polarity in EDM?	Remember	CO 4	AAEB16.09
6	Explain the working principle of ECM with a neat diagram. Write the advantages and applications electro chemical machining.	Understand	CO 4	AAEB16.09
7	Explain in detail the working and construction of plasma arc machining. Give a neat sketch. Write advantages and disadvantages of plasma arc machining.	Understand	CO 4	AAEB16.09
8	With help of neat diagram, explain the working procedure abrasive jet machining. Write some advantages, disadvantages and applications	Remember	CO 4	AAEB16.09
9	Give explanation of laser beam machining by using neat sketch. State some advantages, disadvantages and applications of laser beam machining.	Remember	CO 4	AAEB16.09
10	In detail explain the working and principle of electron beam machining with neat diagrams.	Understand	CO 4	AAEB16.09
11	In machining process, explain the factors which affect the accuracy of machined surface, suggest various ways of reducing chatter.	Understand	CO 4	AAEB16.08
12	What is over cutting in electro discharge machining process and how it is affected by amperage and frequency?	Remember	CO 4	AAEB16.08
13	What are the various materials of which electrodes are made of electro discharge machining process and what are their advantages?	Remember	CO 4	AAEB16.08
14	Explain about abrasive jet machining with neat schematic diagram?	Remember	CO 4	AAEB16.08
15	How USM will work? List down the type of abrasive particles to be used and applications of USM?	Remember	CO 4	AAEB16.08

## MODULU - V

### AIRCRAFT COMPOSITES

#### PART - A (SHORT ANSWER QUESTIONS)

1	Define Composite material? Explain why metals are to be replaced by composites?	Understand	CO 5	AAEB16.13
2	Explain the glass transition temperature. Discuss annealing process in glass manufacturing?	Understand	CO 5	AAEB16.09
3	Classify polymers, and discuss the applications of the polymers.	Understand	CO 5	AAEB16.09
4	Illustrate the process of plastic polymerization.	Remember	CO 5	AAEB16.09
5	Explain briefly about thermo plastics.	Remember	CO 5	AAEB16.09
6	What are thermo setting plastics?	Understand	CO 5	AAEB16.09
7	Identify the additives that are used in polymers?	Understand	CO 5	AAEB16.09
8	Discuss about Fiber Reinforced Plastic.	Understand	CO 5	AAEB16.14
9	Describe the applications composites in airline industry.	Understand	CO 5	AAEB16.14
10	Indicate the importance of matrix in composite.	Understand	CO 5	AAEB16.14
11	Explain the role of fiber in composites? Write some of the important fibers.	Remember	CO 5	AAEB16.14



13	Discuss examples of fibers used in composites.	Remember	CO 5	AAEB16.14
14	Elaborate some examples of resins used in composites.	Understand	CO 5	AAEB16.14
15	Define super alloy. Name some of the super alloys.	Understand	CO 5	AAEB16.14
<b>PART - B (LONG ANSWER QUESTIONS)</b>				
1	Discuss about polymers. Classify them and give typical applications in aerospace industry and mention their critical issues?	Remember	CO 5	AAEB16.13
2	Discuss methods of polymerization. Elaborate the material composition and behavior at different temperatures?	Remember	CO 5	AAEB16.13
3	Explain about thermos plastics? Explain properties. Classify them and give typical applications in aerospace industry and mention their critical issues?	Remember	CO 5	AAEB16.13
4	Debate on thermo- setting plastics? Give their properties and load of impacts on them. Elaborate the temperature settings on thermo setting plastics.	Remember	CO 5	AAEB16.13
5	Elaborate the production process of composite. Explain their properties in terms of strength?	Understand	CO 5	AAEB16.14
6	Discuss fiber reinforced plastics and their uses. Is fiber reinforced plastic an asset to aerospace industry?	Understand	CO 5	AAEB16.14
7	Discuss the properties of metal matrix composites. Give their properties and load of impacts on them. Elaborate the temperature settings on thermo setting plastics.	Understand	CO 5	AAEB16.14
8	What are the advantages of composites over metals? Explain about their properties and load of impacts on them. Elaborate the temperature settings on thermo setting plastics.	Remember	CO 5	AAEB16.14
9	Differentiate between alloys and composite materials? Give their properties and load of impacts on them.	Remember	CO 5	AAEB16.14
10	Elaborate applications of composite materials? Give their properties and load of impacts on them. Elaborate the temperature settings on thermo setting plastics.	Understand	CO 5	AAEB16.14
<b>PART – C (PROBLEM SOLVING AND CRITICAL THINKING)</b>				
1	Give a short note on each fiber which commonly used in aerospace industries? Discuss why composites are required to be used in the manufacturing of the aircrafts?	Understand	CO 5	AAEB16.14
2	List down the various components of an aircraft where composite materials were replaced metals?	Remember	CO 5	AAEB16.14
3	Difference between thermo setting and thermo plastic matrix? Where these things are practically used and write the mathematical equations involved in it?	Understand	CO 5	AAEB16.14
4	Explain major Applications of composite materials?	Understand	CO 5	AAEB16.13
5	What is the key role of fiber and matrix in composite materials?	Remember	CO 5	AAEB16.14
6	How composites can be classified? Explain why composites are supposed to be used in aircrafts?	Remember	CO 5	AAEB16.14
7	Sketch the structure of FRP and explain clearly? Explain why composites are supposed to be used in airlines?	Understand	CO 5	AAEB16.14
8	List down the various materials used for aircraft components? Explain why composites are supposed to be used in airlines?	Remember	CO 5	AAEB16.14
9	Define isotropic, anisotropic, orthotropic materials? Why composite materials are isotropic in nature?	Remember	CO 5	AAEB16.14
10	Define homogeneous, heterogeneous materials? Why composite materials are heterogeneous in nature?	Remember	CO 5	AAEB16.14

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