

# **INSTITUTE OF AERONAUTICAL ENGINEERING**

(Autonomous) Dundigal, Hyderabad - 500 043

**AERONAUTICAL ENGINEERING** 

## **DEFINITIONS AND TERMINOLOGY**

Course Name	:	AIRCRAFT PRODUCTION TECHNOLOGY
Course Code	:	AAAEB16
Program	:	B. Tech
Semester	:	V
Branch	:	Aeronautical Engineering
Section	:	A & B
Academic Year	:	2019–2020
Course Faculty	:	Mr. Suresh Kumar R, Assistant Professor

#### **OBJECTIVES**

Ι	To help students to consider in depth the terminology and nomenclature used in the syllabus.			
II	To focus on the meaning of new words / terminology/nomenclature			

### DEFINITIONS AND TERMINOLOGYQUESTION BANK

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code				
	MODULE - I								
1	Define ductility.	It is the property of a material that allows it to deform or make into thin wires under the action of tensile loads plastically.	Remember	CO1	AAEB16.01				
2	What is plasticity?	It is the property of a material that makes it to be in the deformed size and shape even after the load stops acting on it.	Remember	CO1	AAEB16.01				
3	Define elasticity.	It is the property of a material to come back to its original size and shape even after the load stops acting on it.	Remember	CO1	AAEB16.02				
4	Define strength.	It is the capacity of the material to withstand the breaking, bowing, or deforming under the action of mechanical loads on it.	Remember	CO1	AAEB16.02				
4	What is tensile strength?	It is the property of a material that allows it to deform under tensile loading without breaking under the action of a load.	Remember	CO1	AAEB16.02				
5	What is malleability?	It is the ability of a material to form in to thin sheets without any rapture.	Understand	CO1	AAEB16.02				
6	Define toughness.	It is the ability of a material to bent without any fractures	Understand	CO1	AAEB16.02				
7	Define creep.	Under Gradual load conditions, the ability of a material to get deformed with respect to time and Temperature	Remember	CO1	AAEB16.02				
8	Define brittleness.	It is that property by virtue of which a material breaks easily under action of shock loads without appreciable amount.	Remember	CO1	AAEB16.03				
9	Define resilience.	It is the property of a material to absorb energy when it is deformed elastically and then, upon unloading, to have this energy recovered.	Remember	CO1	AAEB16.03				
10	What is endurance limit?	The maximum stress to which the material can be subjected without fatigue failure	Understand	CO1	AAEB16.03				
12	What is fatigue?	It is the strength of the materials when subjected to cyclic or rapid fluctuating load conditions.	Remember	CO1	AAEB16.03				
13	Define rigidity.	It is the property of a material by virtue of which the material resists elastic or plastic deformation under applied loads.	Remember	CO1	AAEB16.03				
14	What is alloy?	A substance having metallic properties and composed of two or more chemical elements of which at least one is metal.	Remember	CO1	AAEB16.04				
15	What is Core?	The internal portion of a shape or part	Remember	CO1	AAEB16.04				
16	Define Annealing.	Heating to and holding at a suitable temperature and then cooling at suitable	Understand	COI	AAEB16.03				

rate, for such purposes as reducing hardness, improving machinability, facilitating cold working, producing a desired microstructure, or obtaining desired mechanical, physical. or other properties.   Understand   COI   AAEB16.0     17   What is Alloy Steel?   Steel to which alloying elements are added to achieve specific properties.   Understand   COI   AAEB16.0     18   What is Austempering?   A heat treatment process that consists of quenching a ferrous alloy from a temperature above the critical range in a medium having a rate of heat abstraction (usually molten astl) sufficiently high to prevent the formation of high-temperature transformation.   Remember   COI   AAEB16.0     19   Define Austenite.   A solid solution of one or more elements in face-centered cubic iron. Unless otherwise designated (such as nickel austenite), the solute is generally assumed to be carbon.   Remember   COI   AAEB16.0     20   What is Austenitizing?   The process of forming austenite by heating ferrous alloy above the transformation range.   Remember   COI   AAEB16.0     21   What is Bainite?   A consituent in the microstructure of steel; formed by the transformation of austenite below the perafitic and above the materistic transformation temperatures.   Understand   COI   AAEB16.0     23   Define Grain.   A grain is a particle of metal or alloy in which the space lattice patt	S No	QUESTION	ANSWER	Blooms Level	СО	CO Code
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	MODULE – II						
S No	QUESTION	ANSWER	Blooms Level	СО	CO Code		
1	What is Steel?	An alloy of iron and carbon which may contain other elements in which the carbon content does not exceed about 2.0% and which is malleable at some temperature in the solid state.	Remember	CO2	AAEB16.04		
2	What is Core?	The internal portion of a shape or part	Remember	CO2	AAEB16.04		
3	What is pattern?	An approximate duplicate of the final casting used to form the mold cavity.	Remember	CO2	AAEB16.06		
4	Explain cope.	The top half of the pattern, flask, mold, or core.	Understand	CO2	AAEB16.06		
5	Explain Drag.	The bottom half of the pattern, flask, mold, or core.	Remember	CO2	AAEB16.06		
6	What is a sprue?	The pouring cup attaches to the sprue, which is the vertical part of the gating system. The other end of the sprue attaches to the runners.	Remember	CO2	AAEB16.06		
7	What is Riser?	An extra void in the mold that fills with molten material to compensate for shrinkage during solidification.	Remember	CO2	AAEB16.05		
8	What is shrinkage?	A casting defect is an undesired irregularity in a metal casting process. They are broken down into five main categories: gas porosity, shrinkage defects, mold material defects, pouring metal defects, and metallurgical defects.	Remember	CO2	AAEB16.05		
9	What is a casting?	Casting is a manufacturing process in which a liquid material is usually poured into a mold, which contains a hollow cavity of the desired shape, and then allowed to solidify. The solidified part is also known as a casting, which is ejected or broken out of the mold to complete the process	Remember	CO2	AAEB16.05		
10	What is Mold cavity?	The combined open area of the molding material and core, where the metal is poured to produce the casting.	Remember	CO2	AAEB16.05		
11	Define Chaplet.	Long vertical holding rod for core that after casting it become the integral part of casting, provide the support to the core.	Understand	CO2	AAEB16.05		
12	Explain about Solidification.	Solidification, also known as freezing, is a phase change of matter that results in the production of a solid. Generally, this occurs when the temperature of a liquid is lowered below its freezing point	Remember	CO2	AAEB16.05		
13	What is Binder?	The bonding agent used as an additive to mold or core sand to improve the strength	Understand	CO2	AAEB16.05		
14	Explain die casting process.	The die casting process forces molten metal under high pressure into mold cavities (which are machined into dies).	Understand	CO2	AAEB16.06		
15	What is an Arc?	The physical gap between the end of the electrode and the base metal. The physical gap causes heat due to resistance of current flow and arc rays.	Remember	CO2	AAEB16.06		
16	What is arc welding?	It is a type of welding that uses a welding power supply to create an electric arc between a metal stick ("electrode") and the base material to melt the	Understand	CO2	AAEB16.06		
<b>4</b>   P a	Page						

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code
		metals at the point-of-contact. Arc welding processes may be manual, semi- automatic, or fully automated.			
17	What is Gas welding?	Gas welding is a process of construction that involves the use of gases as well as oxygen to weld metals together. Other names for gas welding are oxyacetylene welding and oxy welding. Developed in 1903, gas welding is used to weld pipes and tubes together while also being an effective way to repair metal.	Remember	CO2	AAEB16.06
18	What is arc cutting?	In an arc cutting, carbon or graphite electrode is used to melt the metal to achieve a cut on metals.	Remember	CO2	AAEB16.06
19	What is filled weld?	The position in which welding is performed on the upper side of an approximately horizontal plane and the face of the weld lies in an approximately vertical plane.	Remember	CO2	AAEB16.06
20	What is flux?	Material used to prevent, dissolve, or facilitate removal of oxides and other undesirable surface substances.	Understand	CO2	AAEB16.06
21	What is fusion?	The melting together of filler metal and base metal (substrate), or of base metal only, which results in coalescence.	Remember	CO2	AAEB16.05
22	What is torch?	A device used in the TIG (GTAW) process to control the position of the electrode, to transfer current to the arc and to direct the flow of the shielding gas.	Remember	CO2	AAEB16.03
23	Define welding rod.	A form of filler metal used for welding or brazing which does not conduct the electrical current.	Understand	CO2	AAEB16.03
24	What is porosity?	Cavity type discontinuities formed by gas entrapment during solidification	Remember	CO2	AAEB16.03
25	Define TIG Welding.	Gas tungsten arc welding in this welding process welds using the heat of a non- consumable tungsten electrode. Filler metal can be used and argon inert gas or inert gas mixtures are used for shielding.	Remember	CO2	AAEB16.03
26	What is MIG Welding?	Metal-Inert-Gas in this arc welding process uses a spooled, continuously fed filler metal (consumable) electrode. Shielding is provided by externally supplied gas or gas mixtures.	Understand	CO2	AAEB16.03
27	Define molten weld pool.	The liquid state of a weld prior to solidification as weld metal.	Understand	CO2	AAEB16.04
28	Define spot welding.	A weld made between or upon overlapping members in which coalescence may start and occur on the faying surfaces or may proceed from the surface of one member.	Remember	CO2	AAEB16.03
29	What is inert gas?	A gas which does not normally combine chemically with the base metal or filler metal. See also protective atmosphere.	Remember	CO2	AAEB16.03
30	What is soldering?	It is a process in which two or more items are joined together by melting and putting a filler metal ( <i>solder</i> ) into the joint, the filler metal having a lower melting point than the adjoining metal.	Understand	CO2	AAEB16.03

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code			
31	What is Brazing?	It is the use of a bronze or brass filler rod coated with flux to join steel workpieces. The equipment needed for braze welding is basically identical to the equipment used in brazing.	Remember	CO2	AAEB16.03			
32	Define defects.	A welding defect is any flaw that compromises the usefulness of a weldment.	Remember	CO2	AAEB16.03			
33	What is non-destructive testing of welds?	Welds may be tested using NDT techniques such as industrial radiography or industrial CT scanning using X-rays or gamma rays, ultrasonic testing, liquid penetrant testing, magnetic particle inspection	Understand	CO2	AAEB16.03			
34	What is undercut?	When the base of metal melts away from the weld zone, then a groove is formed in the shape of a notch, then this type of defect is known as Undercut. It reduces the fatigue strength of the joint.	Understand	CO2	AAEB16.03			
	MODULE – III							
1	What is Blanking?	Shearing process using a die and punch where the exterior portion of the shearing operation is to be discarded.	Remember	CO3	AAEB16.07			
2	Define piercing.	It is a process by which a hole is cut (or torn) in metal. It is different from punching in that piercing does not generate a slug. Instead, the metal is pushed back to form a jagged flange on the back side of the hole.	Understand	CO3	AAEB16.07			
3	What is bending?	Bending <i>is a manufacturing</i> process that produces a V-shape, U-shape, or channel shape along a straight axis in ductile materials, most commonly sheet metal.	Remember	CO3	AAEB16.07			
4	What is drawing process?	Drawing is a metal working process which uses tensile forces to stretch metal or glass. As the metal is drawn (pulled), it stretches thinner, into a desired shape and thickness.	Understand	CO3	AAEB16.07			
5	What is coining process?	Coining is a COsed die forging process, in which pressure is applied on the surface of the forging in order to obtain COser tolerances, smoother surfaces and eliminate draft. COsed die forging is a process in which forging is done by placing the work piece between two shaped dies.	Remember	CO3	AAEB16.07			
6	What is hot spinning?	Hot spinning" involves spinning a piece of metal on a lathe while high heat from a torch is applied to the workpiece.	Remember	CO3	AAEB16.07			
7	What is cold spinning?	Metal spinning, also known as spin forming or spinning or metal turning most commonly, is a metalworking process by which a disc or tube of metal is rotated at high speed and formed into an axially symmetric part. Spinning can be performed by hand or by a CNC lathe.	Remember	CO3	AAEB16.07			
8	What is Shearing processes?	Processes which apply shearing forces to cut fracture or separate the material.	Remember	CO3	AAEB16.07			
9	What is Forming processes?	Processes which cause the metal to undergo desired shape changes without failure or cracking. This includes bending and stretching.	Understand	CO3	AAEB16.07			

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code
10	What is Finishing processes?	processes which are used to improve the final surface characteristics	Understand	CO3	AAEB16.07
12	What is Perforating?	Process in which punching a number of holes in a sheet	Remember	CO3	AAEB16.07
13	What is Parting?	Process in which shearing the sheet into two or more pieces	Remember	CO3	AAEB16.07
14	What is Notching?	Process in which removing pieces from the edges	Remember	CO3	AAEB16.08
15	What is Lancing?	Process in which leaving a tab without removing any material	Understand	CO3	AAEB16.08
16	What is Punching?	Shearing process using a die and punch where the interior portion of the sheared sheet is to be discarded.	Remember	CO3	AAEB16.08
17	What is jig?	A production work holding device that locates the work piece and guides the cutting tool.	Remember	CO3	AAEB16.03
18	What is fixture?	A production work-holding device used for machining duplicate workplaces.	Understand	CO3	AAEB16.03
19	What is Assembling?	A process done by welding, binding with adhesives and bending in the form of a crimped seam	Remember	CO3	AAEB16.03
20	What is Die cutting?	A process that cuts metal pieces without the formation of chips	Remember	CO3	AAEB16.03
21	What is Stamping?	A high production process in which single or multiple punches, bends and embossing are performed at one time or in a progressive die	Understand	CO3	AAEB16.03
22	What is Ejecting devices?	Proper ejecting devices should be incorporated in the body to push the work piece out after operation	Understand	CO3	AAEB16.04
23	What is Back Pitch?	This is the shortest distance between two successive rows in a multiple riveted joint.	Remember	CO3	AAEB16.03
24	What is Jig body?	Holds the various parts of a jig assembly	Remember	CO3	AAEB16.03
25	What are dowel pins?	Hold fabricated parts together	Remember	CO3	AAEB16.03
26	What is Locating devices?	Pins, pads, and recesses used to locate the work piece on the jig.	Remember	CO3	AAEB16.03
27	What is Locking pins?	Inserted to lock or hold the work piece securely to the jig plate while subsequent holes are being drilled.	Understand	CO3	AAEB16.03
28	What is Diagonal pitch?	This is the distance between the centers of rivets in adjacent rows of zigzag riveted joint.	Remember	CO3	AAEB16.03

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code				
29	Define Rivet Codes.	The codes which are used to specify rivet material type, head type, diameter, and length and industry specifications.	Remember	CO3	AAEB16.03				
30	Define Margin or marginal pitch.	This is the distance between the centres of the rivet hole to the nearest edge of the plate.	Understand	CO3	AAEB16.03				
31	What is meant by rivet value?	The least of the strengths in shearing and bearing is the rivet value	Understand	CO3	AAEB16.03				
32	What is Rivet?	A Rivet is a short cylindrical rod having a head and a tapered tail	Remember	CO3	AAEB16.03				
33	What is Pitch?	This is the distance between two centers of the consecutive rivets in a single row.	Understand	CO3	AAEB16.03				
	MODULE - IV								
1	What is Headstock spindle?	Hollow cylindrical shaft supported by bearing	Remember	CO 4	AAEB16.11				
2	What is Saddle?	H-shaped casting mounted on top of lathe ways, provides means of mounting cross- slide	Remember	CO 4	AAEB16.11				
3	What is Cross-slide?	Provides manual or automatic cross movement for cutting tool	Remember	CO 4	AAEB16.11				
4	What is Apron?	Houses gears and mechanism required to move carriage or cross-slide automatically	Understand	CO 4	AAEB16.11				
5	What is Lathe Chuck?	A 3-jaw or 4-jaw chuck threads onto the spindle nose to hold your work	Remember	CO 4	AAEB16.11				
6	Define CNC.	Computer Numeric Control	Understand	CO 4	AAEB16.12				
7	Define HSS.	High Speed Steel	Understand	CO 4	AAEB16.12				
8	What is Carriage?	It used to move cutting tool along lathe bed	Remember	CO 4	AAEB16.12				
9	What is Drilling?	Drilling is the process of producing a hole	Remember	CO 4	AAEB16.12				
10	What is Reaming?	Enlarging an existing hole with a multi-edged tool (reamer) for dimensional accuracy and/or surface finish	Remember	CO 4	AAEB16.12				
11	What is Counter sinking?	Operation or producing a tapered feature at the end of a hole.	Understand	CO 4	AAEB16.12				
12	What is Counter boring?	Enlarging of an existing hole at one end. This enlarged hole is concentric with the existing hole and is flat at the bottom.	Remember	CO 4	AAEB16.12				

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code
13	What is Drill Shank?	It is the part of the drill by which it is held and driven.	Understand	CO 4	AAEB16.12
14	What is Drill Point?	It is the sharpened end of the drill.	Understand	CO 4	AAEB16.12
15	What is Drill Flutes?	The grooves in the body of the drill are known as flutes.	Understand	CO 4	AAEB16.12
16	What is Knee?	The knee mounted in front of the column is for supporting the table and to provide an up or down motion along the Z axis.	Understand	CO 4	AAEB16.12
17	What is Arbor?	The arbor is an extension of the spindle for mounting cutters. Usually, the thread end of an arbor is of left hand helix.	Understand	CO 4	AAEB16.12
18	What is Milling Spindle?	The spindle holds the tool and provides the actual tool rotation.	Remember	CO 4	AAEB16.12
19	What is cross feed?	The feed that operates across the axis of the work piece or at right angles to the main or principal feed on a machine.	Remember	CO 4	AAEB16.13
20	What is cutting fluid?	A liquid used to cool and lubricate the cutting to improve the work surface finish.	Understand	CO 4	AAEB16.13
21	What is drill chuck?	A device used to grip drills and attach them to a rotating spindle	Remember	CO 4	AAEB16.13
22	What is face milling?	Milling a large flat surface with a milling cutter that operates in a plane that is at right angles to its axis	Remember	CO 4	AAEB16.13
23	What is facing?	The process of making a flat or smooth surface (usually the end) on a piece of stock or material.	Understand	CO 4	AAEB16.13
24	What is headstock?	The fixed or stationary end of a lathe or' similar machine tool.	Understand	CO 4	AAEB16.14
25	What is mandrel?	A precision-made tapered shaft to support work for machining between centers.	Remember	CO 4	AAEB16.13
26	What is Shaper Ram?	That part of a shaper which moves back and forth and carries the tool head assembly.	Remember	CO 4	AAEB16.15
27	What is tailstock?	That part of a machine tool. such as a lathe or cylindrical grinder which supports the end of a work piece with a center. It may be positioned at any point along the way of the bed, and may be offset from center to machine tapers.	Remember	CO 4	AAEB16.15
28	What is plain cutter?	A milling cutter with cutting teeth on the periphery (circumference) only	Remember	CO 4	AAEB16.15
29	What is knurling?	The process of finishing a part by scoring (pressing) patterns on the surface of the work.	Understand	CO 4	AAEB16.15
30	What is feed?	The rate of travel of a cutting tool across or into the work-, expressed in inches per minute or in inches per revolution.	Remember	CO 4	AAEB16.15

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code
31	What is compound rest?	The part of a lathe set on the carriage that carries the tool post and holder. It is designed to swing in any direction and to provide feed for turning short angles or tapers.	Remember	CO 4	AAEB16.15
32	What are abrasive wheels?	Wheels of a hard abrasive, such as Carborundum used for grinding.	Understand	CO 4	AAEB16.15
		MODULE - V			
1	Define ingot.	An ingot is a piece of relatively pure material, usually metal, that is cast into a shape suitable for further processing. Ingots usually require a second procedure of shaping, such as cold/hot working, cutting, or milling to produce a useful final product.	Understand	CO 5	AAEB16.15
2	What is bloom?	In general, semi-finished rectangular or almost-square solid metal form, intermediate between an ingot and a billet in the hot-rolling process.	Remember	CO 5	AAEB16.14
3	What is billet?	A billet is a length of metal that has a round or square cross-section, with an area less than $36 \text{ in}^2 (230 \text{ cm}^2)$ .	Understand	CO 5	AAEB16.14
4	Define slab.	A slab is a length of metal that is rectangular in cross-section.	Remember	CO 5	AAEB16.15
5	What is plastic?	A plastic is a polymeric material that is in a semi-liquid state, having the property of plasticity and exhibiting flow.	Remember	CO 5	AAEB16.15
6	Define thermoplastics.	Thermoplastics are plastic polymers that soften when they are heated, allowing for molding, and solidify again as they are cooled Commodity thermoplastics are the easiest to process and are used to manufacture products in high volumes.	Understand	CO 5	AAEB16.14
7	What is Catastrophic Failure?	This term is used to refer to a material breakdown that happens quickly and with little prior signs of failure. This is a term none of us ever want to experience but must be aware of the capability of any material to fail.	Understand	CO 5	AAEB16.14
8	Define Composite.	Substance that is made up of a combination of two or more Different materials.	Remember	CO 5	AAEB16.13
9	Define Compound.	A substance consisting of atoms or ions of two or more different elements in definite proportions, usually having properties unlike those of its constituent elements	Remember	CO 5	AAEB16.13
10	Define Epoxy Resin.	Resins, which may be of widely different structures but are characterized by the presence of the epoxy group.	Remember	CO 5	AAEB16.13
11	Define Fiber.	A threadlike structure that combines with others to form animal or vegetable tissue.	Remember	CO 5	AAEB16.13
12	What is A Glass type?	The glass which is used when resistance to acids is required.	Understand	CO 5	AAEB16.13
13	Define E glass.	Electrical Glass constitutes the majority of glass textile production.	Remember	CO 5	AAEB16.13

S No	QUESTION	ANSWER	Blooms Level	СО	CO Code
14	Define Graphite.	Graphite Crystalline form of carbon used in pencils, as lubricant, and formed into manmade fibers etc.	Remember	CO 5	AAEB16.13
15	What is HDPE?	high-density polyethylene	Remember	CO 5	AAEB16.13
16	What is Kelvar?	Reinforced plastics, called composites, are plastics strengthened with fibers, strands, COth, or other materials.	Understand	CO 5	AAEB16.13
17	What is Laminating?	This term refers to the process of binding layers of materials together in a plastic matrix.	Understand	CO 5	AAEB16.13
18	Define Latex.	This is a natural rubber extracted from rubber trees found Mainly in Southeast Asia.	Remember	CO 5	AAEB16.13
19	What is LOCTITE?	Brand name cynacrolate / adhesive. Available in assorted strength and formulation.	Remember	CO 5	AAEB16.15
20	Define Micro balloons.	Microscopic bubbles of glass, ceramic or Phenolic used as a filler or to create syntactic foam or putty mixtures.	Remember	CO 5	AAEB16.15
21	Define Polymer.	A substance composed of molecules characterized by the repetition (neglecting ends, branch junctions, and other minor irregularities) of one or more types of monomeric units*	Remember	CO 5	AAEB16.15
22	What is Polymerization?	The process in which many small molecules (molecular weight ~100) are joined together to form a few, much larger molecules (molecular weight 10 000 - 10 000 000).	Understand	CO 5	AAEB16.15
23	What is Plastisizer?	A compound added to a polymer to make it softer and more flexible.	Remember	CO 5	AAEB16.14
24	Define crystal.	A crystal may be defined as a solid composed atoms, ions or molecules arranged in a pattern periodic in three dimensions.	Remember	CO 5	AAEB16.14
25	Thermoplastics.	Reference to the makeup of monomers that when formulated in a liquid state solidifies by cooling.	Understand	CO 5	AAEB16.15
26	Define Young's Modulus.	The ratio of tensile stress to tensile strain below the proportional limit.	Understand	CO 5	AAEB16.14
27	What is Resin?	While this term applies to a variety of materials it usually indicates a material that requires a catalyst, promoter and or temperature to allow it to cure.	Remember	CO 5	AAEB16.14
28	What is Primer?	This term refers to a substance that is designed to improve adhesion to a materials surface.	Remember	CO 5	AAEB16.13
29	What is Non Ferrous?	Metal which containing no iron.	Understand	CO 5	AAEB16.13
30	Define Monomer.	A substance composed of molecules capable of reacting with like or unlike molecules to form polymers.	Remember	CO 5	AAEB16.13
31	What is Ferrous?	Metal containing or derived from iron	Remember	CO 5	AAEB16.14
32	What is Corrosion resistance?	The ability of a material to not be chemically degraded in its working environment.	Understand	CO 5	AAEB16.15

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## Signature of the Faculty

Signature of the HOD