INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

MECHANICAL ENGINEERING

DEFINITIONS AND TERMINOLOGY QUESTION BANK

Course Title	**MANUFACTURING PROCESSES**				
Course Code	AMEB05				
Programme	B.Tech				
Semester	III	ME			
Course Type	Core				
Regulation	IARE - R18				
Course Structure	**Theory**			**Practical**	
	Lectures	**Tutorials**	**Credits**	**Laboratory**	**Credits**
	3	1	4	2	1
Chief Coordinator	Mr. G. Aravind Reddy, Assistant Professor,				
Course Faculty	Mr. G. Aravind Reddy, Assistant Professor, Mr V. Mahidhar Reddy, Assistant Professor				

COURSE OBJECTIVES:

I	Understand and develop an appreciation of the manufacturing processes in correlation with material properties
II	Learn the material properties which change the shape, size and form of the raw materials into the desirable product
III	Understand the processes for creating products by conventional or unconventional manufacturing methods

DEFINITIONS AND TERMINOLOGY QUESTION BANK

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
MODULE-I						
1	Define dry sand mould?	All parts of the mould are dried in an oven before being reassembled for casting.	Understand	CO1	CLO1	AMEB05.01
2	Define choke?	It is the deep area after sprue to guide the molten metal to travel in runner	Understand	CO1	CLO1	AMEB05.01
3	What is a flask?	A metal or wood frame without fixed top or bottom, in which the mold formed.	Remember	CO1	CL02	AMEB05.01
4	What is parting line?	This is the dividing line between the two molding flasks that makes up the mold.	Understand	CO1	CLO1	AMEB05.01
5	What is molding sand?	Sand, which binds strongly without losing its permeability. It is a mixture of silica sand, clay and	Understand	CO1	CLO1	AMEB05.01

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		moisture un appropriate proportions.				
6	What is facing sand?	The small amount of carbonaceous material sprinkled on the inner surface of the mold cavity to give a better surface finish to the castings.	Understand	CO1	CLO1	AMEB05.02
7	What is a core?	A separate part of the mold made of sand and generally baked, which is used to create various shaped cavities in the castings.	Remember	CO1	CLO1	AMEB05.02
8	Define sweep moulding?	This are in the shape of surface of revolution along the fixed axis in 2d format	Understand	CO1	CLO2	AMEB05.02
9	What is a slick?	It is a small double ended tool having a flat on one end and a spoon on the other end.	Remember	CO1	CLO2	AMEB05.02
10	What is a runner?	The channel through which the molten metal carried from the sprue to the gate.	Remember	CO1	CLO3	AMEB05.02
11	What is squeeze machine?	It is where the mould box is squeezed between the machine table and overhead squeeze board with the help of pneumatically or hydraulically.	Remember	CO1	CLO2	AMEB05.03
12	What is a rammer?	It is a wood tool used for packing or ramming the sand into mould.	Understand	CO1	CLO1	AMEB05.03
13	What is vent on mold?	Small opening in the mold to facilitate escape of air gases	Understand	CO1	CLO1	AMEB05.03
14	Define Liquid Shrinkage?	Reduction in volume when the metal changes from liquid state to solid state at the solidus temperature	Remember	CO1	CLO2	AMEB05.03
15	Define solid shrinkage?	Reduction in the volume caused when the metal loses temperature in the solid state	Understand	CO1	CLO1	AMEB05.03
16	Define centrifugal casting?	Molten metal is poured into moulds while they are rotating with centrifugal forces.	Understand	CO1	CLO 4	AMEB05.04
17	Define casting yield?	It is the ratio of weight of the casting /weight of poured metal*100	Understand	CO1	CLO 4	AMEB05.04
18	Explain the cause of blow hole?	It causes because of moisture and slag inclusion	Understand	CO1	CLO 4	AMEB05.04
19	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	Understand	CO1	CLO 1	AMEB05.01
20	What is pattern?	An approximate duplicate of the final casting used to form the mold cavity.	Understand	CO1	CLO 1	AMEB05.01
21	Explain cope and drag?	Cope: The top half of the pattern, flask, mold, or core. Drag: The bottom half of the pattern, flask, mold, or core.	Remember	CO1	CLO 1	AMEB05.01
22	What is a Gating	The network of connected	Understand	CO1	CLO 1	AMEB05.01

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	system?	channels that deliver the molten material to the mold cavities.				
23	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.	Understand	CO1	CLO 1	AMEB05.01
24	What is Mold cavity?	The combined open area of the molding material and core, where the metal is poured to produce the casting.	Understand	CO1	CLO 2	AMEB05.02
25	Define Pouring cup or pouring basin?	The part of the gating system that receives the molten material from the pouring vessel.	Remember	CO1	CLO 2	AMEB05.02
26	What is Riser?	An extra void in the mold that fills with molten material to compensate for shrinkage during solidification.	Understand	CO1	CLO 2	AMEB05.02
27	Define Chaplet?	Long vertical holding rod for core that after casting it become the integral part of casting, provide the support to the core.	Remember	CO1	CLO 2	AMEB05.02
28	Define cooling curves?	Cooling curves are important in controlling the quality of a casting. The most important part of the cooling curve is the cooling rate which affects the microstructure and properties.	Remember	CO1	CLO 2	AMEB05.02
29	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	CO1	CLO 3	AMEB05.03
30	What is the meaning of pattern Allowance?	Allowance in Pattern generally +or- mm given in the original dimensions of the pattern Allowance are given because easy remove of pattern from sand mold	Understand	CO1	CLO 3	AMEB05.03
31	What is Binder?	The bonding agent used as an additive to mold or core sand to improve the strength	Understand	CO1	CLO 3	AMEB05.03
32	Define the term chill?	A chill is an object used to promote solidification in a specific portion of a metal casting mold. Normally the metal in the mold cools at a certain rate relative to thickness of the casting.	Remember	CO1	CLO 3	AMEB05.03
MODULE-II						
1	Define weldability?	The capacity of being welded into in separable joints having specific properties.	Understand	CO1	CLO 6	AMEB05.06
2	Define melting point in welding?	It's the temperature possess by the metal to undergo weld to its metal state.	Understand	CO1	CLO 6	AMEB05.06
3	Define plastic welding?	The pieces of metal to be joined are heated to plastic state and then forced by external	Understand	CO1	CLO 6	AMEB05.06
4	What is non	The material at the joint is heated to	Understand	CO1	CLO 6	AMEB05.06

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	pressure welding?	molten state and allowed to solidify.				
5	Define cold welding?	Joints are obtained without application of heat. But by application of pressure.	Understand	CO2	CLO 6	AMEB05.06
6	Define chilled casting?	The surrounding parts are good conductors of heat they by its termed as chilled casting	Understand	CO2	CLO 6	AMEB05.06
7	Define slag in weld?	Unwanted material in the molten weld pool is slag	Understand	CO2	CLO 6	AMEB05.06
8	Define metal preparation?	Preparing the melts to be joining using external heat before weld	Understand	CO2	CLO 6	AMEB05.06
9	Define oxy acetylene weld?	Welding created using oxy acetylene mixture with heat liberation	Understand	CO2	CLO 6	AMEB05.06
10	Define neutral flame?	When gases are supplied to the torch in equal volumes, a neutral flame is produced.	Remember	CO2	CLO 7	AMEB05.07
11	Define carburizing flame?	When excess of acetylene is supplied in the weld torch the flame emerged is carburizing flame.	Remember	CO2	CLO 7	AMEB05.07
12	What is oxidizing flame?	Flame emerges when oxygen supply is heavy than the acetylene for welding.	Understand	CO2	CLO 7	AMEB05.07
13	Define leftward welding?	Weld is made working from right to left while blow pipe is hold in right hand and weld rod in left hand	Remember	CO2	CLO 7	AMEB05.07
14	Define rightward weld?	Welding carried out from left to right the rod following the blowpipe	Understand	CO2	CLO 8	AMEB05.08
15	Define pressure regulator?	Which reduces the cylinder pressure to the required working condition and steady flow	Remember	CO2	CLO 8	AMEB05.08
16	Define carbon arc welding?	Negative electrode used as carbon metal and positive being weld material without filler rod	Remember	CO2	CLO 8	AMEB05.08
17	Define flux-cored arc welding?	An inside-out wire with the flux inside a tubular electrode with constant voltage dc supply	Understand	CO2	CLO 8	AMEB05.08
18	Define submerged arc welding?	It is automatic process where arc is formed between end of continuous depositing surface under a layer of flux	Understand	CO2	CLO 8	AMEB05.08
19	what is welding?	Welding is a fabrication or sculptural process that joins materials, usually metals or thermoplastics, by causing fusion, which is distinct from lower temperature metal- joining techniques such as brazing and soldering, which do not melt the base metal.	Understand	CO2	CLO 5	AMEB05.05
20	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.	Understand	CO2	CLO 5	AMEB05.05
21	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	Understand	CO2	CLO 5	AMEB05.05

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		melt the metals at the point-of-contact. Arc welding processes may be manual, semi-automatic, or fully automated.				
22	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.	Understand	CO2	CLO 8	AMEB05.05
23	What is arc cutting?	In an arc cutting, carbon or graphite electrode is used to melt the metal to achieve a cut on metals.	Understand	CO2	CLO 8	AMEB05.05
24	What is filler metal?	The metal (material) to be added in making a welded, brazed, or soldered joint.	Understand	CO2	CLO 6	AMEB05.06
25	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.	Understand	CO2	CLO 6	AMEB05.06
26	What is flux?	Material used to prevent, dissolve, or facilitate removal of oxides and other undesirable surface substances.	Understand	CO2	CLO 6	AMEB05.06
27	What is flowability?	The ability of molten filler metal to flow or spread over a metal surface.	Understand	CO2	CLO 6	AMEB05.06
28	What is fusion?	The melting together of filler metal and base metal (substrate), or of base metal only, which results in coalescence.	Understand	CO2	CLO 6	AMEB05.06
29	Define Temporary weld?	A weld made to attach a piece or pieces to a weldment for temporary use in handling, shipping, or working on the weldment.	Remember	CO2	CLO 7	AMEB05.07
30	Define thermal stresses?	Stresses in metal resulting from non-uniform temperature distribution.	Remember	CO2	CLO 7	AMEB05.07
31	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.	Understand	CO2	CLO 7	AMEB05.07
32	Define welding rod?	A form of filler metal used for welding or brazing which does not conduct the electrical current.	Remember	CO2	CLO 7	AMEB05.07
33	Define welding technique?	The details of a welding procedure which are controlled by the welder or welding operator.	Remember	CO2	CLO 7	AMEB05.07
34	What is weldment?	An assembly whose component parts are joined by welding.	Understand	CO2	CLO 8	AMEB05.08
35	Define wetting?	The bonding or spreading of a liquid filler metal or flux on a solid base	Remember	CO2	CLO 8	AMEB05.08

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		metal.				
36	Define work angle?	The angle that the electrode makes with the referenced plane or surface of the base metal in a plane perpendicular to the axis of the weld.	Remember	CO2	CLO 8	AMEB05.08
37	What is work lead?	The electric conductor between the source of arc welding current and the work.	Understand	CO2	CLO 8	AMEB05.08
38	What is welding head?	The part of a welding machine or automatic welding equipment in which a welding gun or torch is incorporated.	Understand	CO2	CLO 8	AMEB05.08
39	Define Thermit welding?	It is process for welding metal is based on the chemical reaction between finely divided aluminium and iron oxide.	Remember	CO2	CLO 9	AMEB05.09
40	Define explosive weld?	It is carried out by bringing together properly paired metal surface with high relative velocity at a high pressure caused by explosive.	Understand	CO2	CLO 9	AMEB05.09
41	Define ultrasonic weld?	Welding caused by high frequency vibratory energy in to overlapping metals into the area to be joined.	Remember	CO2	CLO 9	AMEB05.09
42	Define electron beam welding?	Welding caused by the fast moving beam of electrons focused on the work piece.	Remember	CO2	CLO 9	AMEB05.09
43	Define laser weld?	Welding carried out using very high intense beam of optical radiation.	Understand	CO2	CLO 9	AMEB05.09
44	Define bronze welding?	A low melting alloy is introduced between metals and joint is produced by adhesion.	Remember	CO3	CLO 10	AMEB05.10
45	What is soft soldering?	It is employed for joining wires and small parts using blow torch.	Remember	CO3	CLO 10	AMEB05.10
46	What is hot soldering?	Its employs solders which melts at higher temperatures and are strong than those in other soldering	Understand	CO3	CLO 10	AMEB05.10
47	Define spelte?	Harder filler material used in joint of soldering materials	Remember	CO3	CLO 10	AMEB05.10
48	Define H in resistance welding?	$H= I^2RT$ where H is heat, I is current, R is resistance and T is Time	Remember	CO3	CLO 10	AMEB05.10
49	Define poor fusion?	The lack of thorough and complete union between the deposited and parent metal.	Understand	CO3	CLO 11	AMEB05.11
50	Define depth of weld?	The distance that fusion extends into the base metal or previous pass from the surface melted during welding.	Remember	CO2	CLO 11	AMEB05.11
51	Define slag inclusion?	The presences of nonmetallic substances in the metal when fusion takes place	Understand	CO3	CLO 11	AMEB05.11
52	Define corner joint?	Joining the edges of two sheets or plates surface arc at an angle of 90^0 to each other	Understand	CO3	CLO 11	AMEB05.11
53	Define Heat Zone?	It is the volume of material at or near the weld which properties have been altered due to the weld heat.	Remember	CO3	CLO 12	AMEB05.12
54	What is optical radiation?	The radiation generated by the welding arc which is effecting the	Remember	CO3	CLO 12	AMEB05.12

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		eyes				
55	Define fumes?	Rise of gases with oxides of metals in the environmental	Understand	CO3	CLO 12	AMEB05.12
56	Define friction welding?	Welding caused by rubbing action of two metals	Understand	CO3	CLO 12	AMEB05.12
57	Define TIG Welding?	Also known as GTAW (gas tungsten arc welding) 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	CLO 9	AMEB05.09
58	What is MIG Welding?	MIG is an acronym for Metal-Inert-Gas, also known as GMAW or Gas Metal Arc Welding. 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	CLO 9	AMEB05.09
59	Define molten weld pool?	The liquid state of a weld prior to solidification as weld metal.	Remember	CO2	CLO 9	AMEB05.09
60	Define plasma?	A gas that has been heated to an at least partially ionized condition, enabling it to conduct an electric current.	Remember	CO2	CLO 9	AMEB05.09
61	What is porosity?	Cavity type discontinuities formed by gas entrapment during solidification.	Understand	CO	CLO 9	AMEB05.09
62	Define pre-heating?	The application of heat to the base metal immediately before welding, brazing, soldering, thermal spraying, or cutting.	Remember	CO3	CLO 10	AMEB05.10
63	Define Shield metalarc welding (SMAW) ?	An arc welding process which produces coalescence of metals by heating them with an arc between a covered metal electrode and the work. Shielding is obtained from decomposition of the electrode covering. Pressure is not used and filler metal is obtained from the electrode.	Remember	CO3	CLO 10	AMEB05.10
64	What is shrinkage void?	A cavity-type discontinuity normally formed by shrinkage during solidification.	Understand	CO2	CLO 10	AMEB05.10
65	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. The weld cross section (plan view) is approximately circular.	Remember	CO3	CLO 10	AMEB05.10
66	Define T-joint?	A joint between two members located approximately at right angles to each other in the form of a T.	Remember	CO3	CLO 10	AMEB05.10
67	What is inert gas?	A gas which does not normally combine chemically with the base metal or filler metal. See also	Understand	CO3	CLO 11	AMEB05.11

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		protective atmosphere.				
68	Define depth of fusion?	The distance that fusion extends into the base metal or previous pass from the surface melted during welding.	Remember	CO3	CLO 11	AMEB05.11
69	What is soldering?	It is a process in which two or more items are joined together by melting and putting a filler metal (solder) into the joint, the filler metal having a lower melting point than the adjoining metal. Unlike welding, soldering does not involve melting the work pieces.	Understand	CO3	CLO 11	AMEB05.11
70	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.	Understand	CO3	CLO 13	AMEB05.13
71	Define defects?	A welding defect is any flaw that compromises the usefulness of a weldment.	Remember	CO3	CLO 11	AMEB05.11
72	Define Heat Affected Zone?	The Heat Affected Zone (HAZ) is the volume of material at or near the weld which properties have been altered due to the weld heat. Since the resistance welding process relies on heating two parts, some amount of HAZ is inevitable.	Remember	CO3	CLO 12	AMEB05.12
73	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 or via eddy current.	Understand	CO3	CLO 12	AMEB05.12
74	what is destructive testing of welds?	A number of destructive weld testing methods are used to determine weld integrity or performance. Typically, they involve sectioning and/or breaking the welded component and evaluating various mechanical and / or physical characteristics.	Understand	CO3	CLO 13	AMEB05.13
75	Define hot and cold crack?	Hot Crack – It is more prominent during crystallization of weld joints where the temperature can rise more than 10,000-degree Celsius. Cold Crack – This type of crack occurs at the end of the welding process where the temperature is quite low. Sometimes cold crack is visible several hours after welding or even after few days.	Remember	CO3	CLO 13	AMEB05.13
76	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	CO3	CLO 13	AMEB05.13

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
74	what is destructive testing of welds?	A number of destructive weld testing methods are used to determine weld integrity or performance. Typically, they involve sectioning and/or breaking the welded component and evaluating various mechanical and / or physical characteristics.	Understand	CO3	CLO 13	AMEB05.13
75	Define hot and cold crack?	Hot Crack – It is more prominent during crystallization of weld joints where the temperature can rise more than 10,000-degree Celsius. Cold Crack – This type of crack occurs at the end of the welding process where the temperature is quite low. Sometimes cold crack is visible several hours after welding or even after few days.	Remember	CO3	CLO 13	AMEB05.13
MODULE-III						
1	What is mechanical working?	Plastic deformation performed to change dimensions, properties and surface condition by mechanical means of pressure.	Understand	CO4	CLO 14	AMEB05.14
2	Explain metal forming simulation?	In metal forming simulation, the forming of sheet metal is simulated on the computer with the help of special software. Simulation makes it possible to detect errors and problems, such as wrinkles or splits in parts, on the computer at an early stage in forming.	Remember	CO4	CLO 16	AMEB05.16
3	Define deformation temperature?	It is a particular temperature point below the melting point of a metal (or material)	Remember	CO3	CLO 13	AMEB05.13
4	What id radial Drawing?	Cup drawing test uses a circular blank from the metal to be tested. It is inserted in a die, and the severity of the draw it is able to withstand without tearing called the drawing ratio, is noted. The drawing ratio is the ratio of the cup diameter to the blank diameter.	Remember	CO3	CLO 13	AMEB05.13
5	What is Normal Anisotropy Coefficient ?	The anisotropy coefficient is derived from the ratio of the plastic width strain the thickness strain. A material with a high plastic anisotropy also has a greater “thinning resistance.” In general, the higher the anisotropy coefficient the better the material deforms in drawing operations.	Understand	CO3	CLO 13	AMEB05.13
6	Define shearing?	Shearing is a cutting operation used to remove a blank of required dimensions from a large sheet	Remember	CO4	CLO 14	AMEB05.14
7	What is trimming?	When parts are produced by die casting or drop forging, a small amount of extra metal gets spread out at the parting plane. This extra	Understand	CO4	CLO 14	AMEB05.14

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		metal, called flash, is cut – off before the part is used, by an operation called trimming. The operation is very similar to blanking and the dies used are also similar to blanking dies.				
8	What is notching?	It is an operation in which a specified small amount of metal is cut from a blank. It is different from punching in the sense that in notching cutting line of the slug formed must touch one edge of the blank or strip.	Remember	CO4	CLO 14	AMEB05.14
9	What is nibbling?	Nibbling is variation of notching, with overlapping notches being cut into the metal. The operation may be resorted to produce any desired shape, for example flanges, collars, etc	Remember	CO4	CLO 14	AMEB05.14
10	Define Perforating?	Perforating is an operation is which a number of uniformly spaced holes are punched in a sheet of metal. The holes may be of any size or shape. They usually cover the entire sheet of metal.	Remember	CO4	CLO 15	AMEB05.15
11	What is bend allowance?	It is the length of the neutral axis in the bend. This determines the blank length needed for a bent part. It can be approximately estimated from the relation $L_b = a (R + kt)$	Understand	CO4	CLO 15	AMEB05.15
12	What is minimum bend radius?	As the ratio of the bend radius to the thickness of sheet (R / t) decreases, the tensile strain on the outer fibres of sheet increases. If R / t decrease beyond a certain limit, cracks start appearing on the surface of material. This limit is called Minimum Bend Radius for the material.	Understand	CO4	CLO 15	AMEB05.15
13	What is Bending Force?	There are two general types of die bending: V – die bending and wiping die bending. V – die bending is used expensively in brake die operations and stamping die operations. The bending force can be estimated from the following simple relation.P = k.Y.L.t2 / D	Understand	CO4	CLO 15	AMEB05.15
14	Define embossing?	Embossing is an operation in which sheet metal is drawn to shallow depths with male and female matching dies.	Understand	CO4	CLO 15	AMEB05.15
15	What is single action presses?	A single action press has one reciprocation slide that carries the tool for the metal forming operation. The press has a fixed bed. It is the most widely used press for operations like blanking, coining, embossing, and drawing.	Understand	CO4	CLO 15	AMEB05.15
16	What is double	A double action press has two slides	Understand	CO4	CLO 16	AMEB05.16

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	action presses?	moving in the same direction against a fixed bed. It is more suitable for drawing operations, especially deep drawing, than single action press				
17	Define triple action presses?	Triple action press has three moving slides. Two slides (the blank holder and the inner slide)	Understand	CO4	CLO 16	AMEB05.16
18	What is dial feed?	Dial feeds consist of rotary indexing tables (or turntables) having fixtures for holding	Remember	CO4	CLO 16	AMEB05.16
19	What is hot working process?	When plastic deformation of metal is carried out at temperature above the recrystallization temperature the process, the process is known as hot working.	Understand	CO4	CLO 14	AMEB05.14
20	What is cold working process?	If this deformation is done below the recrystallization temperature the process is known as cold working.	Understand	CO4	CLO 14	AMEB05.14
21	Define recrysallisation temperature?	The recrystallisation temperature for steels is typically between 400 and 700°C. The recrystallisation conditions, such as heating rate and soaking time depend on the degree of cold work and the steel composition.	Remember	CO4	CLO 15	AMEB05.15
22	Explain strain hardening?	is the strengthening of a metal or polymer by plastic deformation. This strengthening occurs because of dislocation movements and dislocation generation within the crystal structure of the material.	Remember	CO4	CLO 15	AMEB05.15
23	What is Recovery?	Recovery is a process by which deformed grains can reduce their stored energy by the removal or rearrangement of defects in their crystal structure	Understand	CO4	CLO 15	AMEB05.15
24	Explain metal rolling?	In metalworking, rolling is a metal forming process in which metal stock is passed through one or more pairs of rolls to reduce the thickness and to make the thickness uniform. The concept is similar to the rolling of dough.	Remember	CO4	CLO 14	AMEB05.14
25	What is Stamping?	Stamping includes a variety of sheet-metal forming manufacturing processes, such as punching using a machine press or stamping press, blanking, embossing, bending, flanging, and coining	Understand	CO4	CLO 14	AMEB05.14
26	Explain Forming processes?	Forming processes are particular manufacturing processes which make use of suitable stresses (like compression, tension, shear or combined stresses) which cause plastic deformation of the materials to produce required shapes.	Remember	CO4	CLO 14	AMEB05.14
27	Define	Punching or blanking is a process in	Remember	CO4	CLO 14	AMEB05.14

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
	blanking?	which the punch removes a portion of material from the larger piece or a strip of sheet metal. If the small removed piece is the useful part and the rest is scrap, the operation is called blanking				
28	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.	Remember	CO4	CLO 15	AMEB05.15
29	What is bending?	Bending is a manufacturing process that produces a V-shape, U-shape, or channel shape along a straight axis in ductile materials, most commonly sheet metal.	Understand	CO4	CLO 15	AMEB05.15
30	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	CO4	CLO 15	AMEB05.15
31	What is Wire drawing?	Wire drawing is a metal working process used to reduce the cross-section of a wire by pulling the wire through a single, or series of drawing die(s). Although similar in process, drawing is different from extrusion, because in drawing the wire is pulled, rather than pushed, through the die.	Understand	CO4	CLO 15	AMEB05.15
32	what is tube drawing process?	Tube drawing is a process to size a tube by shrinking a large diameter tube into a smaller one, by drawing the tube through a die. This process produces high-quality tubing with precise dimensions, good surface finish, and the added strength of cold working.	Understand	CO4	CLO 15	AMEB05.15
33	what is coining process?	Coining is a closed die forging process, in which pressure is applied on the surface of the forging in order to obtain closer tolerances, smoother surfaces and eliminate draft. Closed die forging is a process in which forging is done by placing the work piece between two shaped dies.	Understand	CO4	CLO 15	AMEB05.15
34	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 work piece.	Understand	CO4	CLO 16	AMEB05.16
35	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	Understand	CO4	CLO 16	AMEB05.16

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		high speed and formed into an axially symmetric part. Spinning can be performed by hand or by a CNC lathe.				
36	What is Press tools?	Press tools are commonly used in hydraulic, pneumatic, and mechanical presses to produce the sheet metal components in large volumes	Remember	CO4	CLO 16	AMEB05.16
37	What is deep drawing?	Deep drawing is one of the most widely used processes in sheet metal forming. Apart from its use in many other sectors, it is applied in the automotive industry for the manufacturing of car body parts.	Understand	CO4	CLO 16	AMEB05.16
MODULE-IV						
1	define extrusion	Extrusion is a process used to create objects of a fixed cross-sectional profile. A material is pushed through a die of the desired cross-section. ... The extrusion process can be done with the material hot or cold. Commonly extruded materials include metals, polymers, ceramics, concrete, modelling clay, and foodstuffs.	Remember	CO4	CLO 17	AMEB05.17
2	Define Hot extrusion	Hot extrusion is one of the most popular method to develop objects having a fixed cross-sectional profile. This extrusion process is done at increased temperature, which keeps the materials from work hardening along with making the procedure of pushing the material through the die simpler.	Remember	CO4	CLO 17	AMEB05.17
3	Define cold extrusion	Cold extrusion is also defined as a compressive forming process (push-through), where the starting material is billet / slug and the process is carried out at the room temperature. During the cold extrusion process, deformation heating of the deforming material takes place at several hundred degrees.	Remember	CO4	CLO 17	AMEB05.17
4	Define forging force?	The forging force, F, required to forge material by impression – die forging operation can be determined by the relation, F = k . s f . A	Remember	CO4	CLO 17	AMEB05.17
5	Define wire drawing?	Wire drawing is primarily the same as bar drawing except that it involves smaller – diameter material that can be coiled. It is generally performed as a continuous operation on draw bench.	Remember	CO4	CLO 17	AMEB05.17
6	Define forgeability?	The ability of the metal to deform without rupture.	Remember	CO4	CLO 17	AMEB05.17

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
7	What is box furnace?	These furnaces are constructed of a rectangular steel frame with one or more burners for gas	Understand	CO4	CLO 17	AMEB05.17
8	What is induction furnace?	The stocks are passed through induction coils in the furnace.	Remember	CO4	CLO 16	AMEB05.16
9	Define forging temperature?	Metal must be heated to a temperature at which it will possess high plastic properties both at the beginning and at the end of the process.	Remember	CO4	CLO 16	AMEB05.16
10	Define finishing temperature?	The temperature at which the hammering of a forging is left off.	Remember	CO4	CLO 16	AMEB05.16
11	Define upsetting?	It is process of increasing the thickness of bar at the expense of its length and brought by the end pressure.	Remember	CO4	CLO 17	AMEB05.17
12	Define setting down?	It is a localized thinning down the effect by the set hammer or set	Understand	CO4	CLO 17	AMEB05.17
13	Define fullering?	The axis of the job is positioned perpendicular to the width of the flat die.	Understand	CO4	CLO 16	AMEB05.16
15	Define annealing?	It is a for the heat treatment which is applied to remove stresses and improve the mechanical properties.	Understand	CO4	CLO 16	AMEB05.16
16	Define normalizing?	Heating in furnace and subsequent cooling of air	Understand	CO4	CLO 17	AMEB05.17
17	Define hammer capacity?	The amount of energy needed for particular job ie 4 kgf per cm^2 of cross sectional area to be worked in material.	Understand	CO4	CLO 17	AMEB05.17
18	Define productivity?	Productivity =output/input.	Understand	CO4	CLO 17	AMEB05.17
19	What is the dead metal zone in extrusion process?	This flow pattern is good for indirect extrusion. The metal at the center of the billet moves faster than the metal at the periphery. In the corner of the leading end of the billet, a separate metal zone is formed between the die face and the container wall, known as a dead-metal zone.	Understand	CO4	CLO 17	AMEB05.17
20	Define backward extrusion?	Indirect extrusion (backward extrusion) is a process in which punch moves opposite to that of the billet. Here there is no relative motion between container and billet.	Remember	CO4	CLO 17	AMEB05.17
21	Define direct extrusion?	Direct extrusion can be employed for extruding solid circular or non-circular sections, hollow sections such as tubes or cups.	Remember	CO4	CLO 17	AMEB05.17
22	What is Impact extrusion?	Hollow sections such as cups, toothpaste containers are made by impact extrusion. It is a variation of indirect extrusion. The punch is made to strike the slug at high speed by impact load. Tubes of small wall thickness can be produced. Usually metals like copper, aluminum, lead are impact extruded.	Understand	CO4	CLO 16	AMEB05.16

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
23	What is aluminum extrusion used for?	Aluminum extrusion is a technique used to transform aluminum alloy into objects with a definitive cross-sectional profile for a wide range of uses. The extrusion process makes the most of aluminum's unique combination of physical characteristics.	Remember	CO4	CLO 16	AMEB05.16
24	Define tube extrusion?	Employing hollow billet and a mandrel at the end of the ram, hollow sections such as tubes can be extruded to closer tolerences. The mandrel extends upto the entrance of the die.	Remember	CO4	CLO 16	AMEB05.16
25	Define hydrostatic extrusion?	In hydrostatic extrusion the container is filled with a fluid. Extrusion pressure is transmitted through the fluid to the billet. Friction is eliminated in this process because of there is no contact between billet and container wall. Brittle materials can be extruded by this process.	Remember	CO4	CLO 17	AMEB05.17
26	define rapid prototyping	Rapid prototyping is a group of techniques used to quickly fabricate a scale model of a physical part or assembly using three-dimensional computer aided design data. Construction of the part or assembly is usually done using 3D printing or "additive layer manufacturing"	Remember	CO4	CLO 16	AMEB05.16
27	Why do we use rapid prototyping?	3D Rapid prototyping advancements allow for faster and lower cost prototypes and model fabrication by eliminating manpower and expensive tooling which allow companies and inventors to bring there products and designs to market faster than the competition.	Understand	CO4	CLO 16	AMEB05.16
28	define rapid tooling	Rapid Tooling is the result of the unison of Rapid Prototyping techniques with conventional tooling practices in order to produce a mold quickly. This process, as well, is used to prepare parts of a functional model from CAD data in less time and at a lower cost.	Remember	CO4	CLO 16	AMEB05.16
29	What is mandrel in extrusion?	Extrusion is a compressive deformation process in which a block of metal is squeezed through an orifice or die opening in order to obtain a reduction in diameter and increase in length of the metal block. The resultant product will have the desired cross-section. Extrusion involves forming of axisymmetric parts.	Remember	CO4	CLO 15	AMEB05.15
MODULE-V						

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
1	Explain forging?	Forging isa manufacturing process involving the shaping of metal using localized compressive forces.	Remember	CO4	CLO 17	AMEB05.17
2	Define power forging?	Machines which help in blowing with pressure.	Understand	CO4	CLO 17	AMEB05.17
3	Define precession forging?	The metal is deformed in cavity so that no flash is formed and the final dimensions are very close to the desired component dimension.	Understand	CO4	CLO 17	AMEB05.17
4	Define die drop forging?	The process uses shaped dies to control the flow of metal. The heated metal is positioned in the lower cavity and on it one or more blows are struck by the upper die. This hammering makes the metal to flow and fill the die cavity completely. Excess metal is squeezed out around the periphery of the cavity to form flash.	Understand	CO4	CLO 15	AMEB05.15
5	What is cold shut defect?	A cold shut is a fault in the surface of a piece of metal caused by two streams of molten metal not joining properly when the piece is being cast. Check for defects such as cracks and cold shuts in the castings.	Understand	CO4	CLO 17	AMEB05.17
6	What is die hummer forging?	It is the simplest forging process which is quite flexible but not suitable for large scale production. It is a slow process. The resulting size and shape of the forging are dependent on the skill of the operator.	Understand	CO4	CLO 15	AMEB05.15
7	Define smith forging?	Open-die forging is also known as smith forging. In open-die forging, a hammer strikes and deforms the workpiece, which is placed on a stationary anvil.	Remember	CO4	CLO 16	AMEB05.16
8	Define Roll forging?	Roll forging is a forging technique used to reduce the thickness of a metal bar, while simultaneously increasing its length. A good candidate for roll forging is cylindrical piece of metal. The roll forging process begins with the heating of the metal to be shaped.	Remember	CO5	CLO 18	AMEB05.18
9	What is Rotary forging?	Rotary forging is a specific cold forging technology which uses incremental steps locally with the material to accurate, precision results.	Understand	CO5	CLO 18	AMEB05.18
10	What is Cold forging?	Cold forging is a manufacturing process where a bar stock is inserted	Understand	CO4	CLO 17	AMEB05.17

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
		into a die and squeezed with a second closed die. The deformation starts at room temperature and changes the shape and size of the initial part until it has assumed the shape of the die.				
11	What is Swaging?	Swaging is a forging process in which the dimensions of an item are altered using dies into which the item is forced. Swaging is usually a cold working process, but also may be hot worked.	Understand	CO5	CLO 18	AMEB05.18
12	What is Cold forging?	Various forging processes conducted at or near ambient temperatures to produce metal components to close tolerances and net shape. These include bending, cold drawing, cold heading, coining, extrusion (forward or backward), punching, thread rolling and others.	Understand	CO5	CLO 18	AMEB05.18
13	Define Cross forging?	Preliminary working of forging stock in alternate planes, usually on flat dies, to develop mechanical properties, particularly in the center portions of heavy sections.	Understand	CO5	CLO 18	AMEB05.07
14	What is Die set?	The assembly of the upper and lower die shoes (punch and die holders), usually including the guide pins, guide pin bushings, and heel blocks.	Understand	CO5	CLO 18	AMEB05.18
15	What is Hammer forging?	The mechanical forming of metal by means of a hammer. The action of the hammer is that of an instantaneous application of pressure in the form of a sudden blow.	Understand	CO5	CLO 17	AMEB05.17
16	Define Impression?	A cavity, or series of cavities (multiple), machined into a forging die to produce a desired configuration in the workpiece during forging.	Understand	CO4	CLO 17	AMEB05.17
17	What is Mandrel?	A blunt-ended tool or rod used to retain or enlarge the cavity in a hollow metal product during forging.	Understand	CO5	CLO 18	AMEB05.18
18	Define precision type forging	In precision type forging operation, the volume of the metal stock and the dies are controlled very tightly. Such operations are called as precision forging which is a modern technique of forging. Metal parts of better strength, high quality details, and complex shape can be easily produced by the forging operation.	Understand	CO4	CLO 17	AMEB05.17
19	What is reduction ratio in forging?	Forging reduction is generally considered to be the amount of cross-sectional reduction taking place during drawing out of a bar or billet. The original cross-section divided by the final cross-section is the forging ratio (say 3:1)	Understand	CO4	CLO 17	AMEB05.05

S. No	QUESTION	ANSWER	Blooms Level	CO	CLO	CLO Code
20	What is stock in forging?	Forging reduction: ratio of the cross-sectional area before and after forging; sometimes refers to percentage reduction in thickness. Forging stock: wrought rod, bar, etc. used as the raw material or stock in forging	Remember	CO4	CLO 16	AMEB05.16
21	What is blocking in forging?	A forging operation often used to impart an intermediate shape in the finishing impression of the dies. Blocking can ensure proper "working" of the material and contribute to great die life. BLOW. The impact or force delivered by one workstroke of the forging equipment.	Remember	CO5	CLO 18	AMEB05.18
22	What is closed die forging?	Closed Die Forging is a forging process in which dies move towards each other and covers the workpiece in whole or in part. The heated raw material, which is approximately the shape or size of the final forged part, is placed in the bottom die	Understand	CO4	CLO 17	AMEB05.17
23	What is no draft forging?	No-draft forging. A forged shape with extremely close tolerances and little or no draft. ... As applied to open die forging, draft is the amount of relative movement of the dies toward each other through the metal in one application of power.... More, requiring a minimum of machining to produce the final part.	Understand	CO4	CLO 17	AMEB05.17

Signature of the Faculty

Signature of HOD