

CENTRAL POLYTECHNIC COLLEGE, THARAMANI – 600113.

(An Autonomous Institution)

DEPARTMENT OF MECHANICAL ENGINEERING



QUESTION BANK

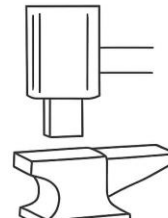
EME31010 - MANUFACTURING PROCESS



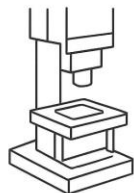
FOUNDRY



WELDING



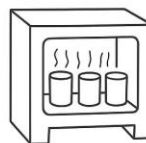
FORGING



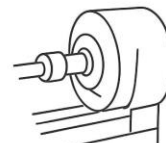
PRESS
WORKING



POWDER
METALLURGY



HEAT
TREATMENT



LATHE

Unit I	FOUNDRY TECHNOLOGY
<p>Chapter 1.1: Foundry: Pattern – Pattern Materials – types – single piece (solid) and split type only – allowances – moulding – moulding tools and boxes – moulding sands – classifications and properties-core - CO2core making.</p> <p>Melting of cast iron - cupola furnace - Melting of nonferrous metals - crucible furnace melting of steel – Electric arc furnaces.</p> <p>Chapter 1.2: Casting: Definition - sand casting using green sand and dry sand - gravity die casting - pressure die casting - hot and cold chamber processes - centrifugal casting - continuous casting– defects in casting - causes and remedies -cleaning of casting and safety practices in foundry</p>	
Unit II	WELDING TECHNOLOGY
<p>Chapter 2.1: Arc Welding and Gas welding: - Arc welding definition – arc welding equipment – arc welding methods – Carbon arc, metal arc, metal inert gas (MIG), tungsten inert gas (TIG).</p> <p>Gas Welding: Definition - Gas Welding Equipment - Oxy and acetylene welding - Three types of flame.</p> <p>Chapter 2.2: Resistance welding and welding related processes: Resistance welding – definition – classification of resistance welding – butt – spot –seam -projection welding - welding related processes - oxy and acetylene cutting - arc cutting - hard facing - bronze welding - soldering and brazing.</p> <p>Destructive and nondestructive types of tests - magnetic particle test – Die Penetrant test - radiographic and ultrasonic test - defects in welding - causes and remedies - safety practices in welding.</p>	
Unit III	FORGING AND PRESS WORKING
<p>FORGING AND PRESS WORKING</p> <p>Chapter 3.1: Forging: Hot working, advantages of hot working – hot working operations – rolling – forging – hammer or smith forging, drop forging, upset forging, press forging – roll forging</p> <p>Chapter 3.2: Press Working: Types of presses – mechanical and hydraulic presses – press tools and accessories – press working operations– bending operations – angle bending – channel bending – curling –drawing – shearing operations – blanking – piercing – trimming – notching –lancing – shaving – parting off</p>	
Unit IV	POWDER METALLURGY AND HEAT TREATMENT
<p>Chapter 4.1: Powder Metallurgy: Methods of manufacturing metal powders – atomization, reduction and electrolysis deposition – compacting –sintering – sizing – infiltration – mechanical properties of parts made by powder metallurgy – design rule for the powder metallurgy process.</p> <p>Chapter 4.2: Heat Treatment: Purpose – procedures – applications of various heat treatment process – Iron carbon equilibrium diagram Annealing – Normalizing – hardening – tempering –quenching medium – different types of quenching medium.</p>	
UNIT V	WORK HOLDING, TOOL HOLDING DEVICES AND POWER TOOLS
<p>Chapter 5.1: Work Holding Devices: Chucks - Centres - Steady Rest - Follower rest - Face Plate - Catch Plate - Drive plate - carrier - Mandrel - Machine Vice - V block - T Bolts and Clamp - Angle plate - Indexing head - Description and uses.</p> <p>Tool Holding Devices: Four way tool post - Turret indexing - Arbors - Adapter - Drill chuck - Sleeve - Socket - collet. Description and uses.</p> <p>Chapter 5.2: Power Tools: Classification - Hand drill- Hammer Drills- Angle Grinder - impact wrench - Circular saw - Chain saw - Jigsaw - Power/impact screwdrivers - Electrical Screwdrivers. Cutters: Craftsman cutter - Reciprocating cutter.</p>	

UNIT	Q NO	QUESTIONS
1	1	<p>A pattern in foundry process refers to</p> <p>(a) a foundry tool (b) a moulding process</p> <p>(c) the model of casting (d) a method of casting</p> <p>Ans: the model of casting</p>
1	2	<p>The taper provided for easy removal of pattern is called</p> <p>(a) camber allowance (b) draft allowance</p> <p>(c) distortion allowance (d) pattern allowance</p> <p>Ans: draft allowance</p>
1	3	<p>The most commonly used material for patterns is</p> <p>(a) Metal (b) Plastic</p> <p>(c) Wax (d) Wood</p> <p>Ans: Wood</p>
1	4	<p>Shrinkage allowance is given to</p> <p>(a) Compensate for contraction (b) Provide draft</p> <p>(c) Improve surface finish (d) Facilitate machining</p> <p>Ans: Compensate for contraction</p>
1	5	<p>The lower part of moulding box is called</p> <p>(a) cope (b) drag</p> <p>(c) snap (d) cheek</p> <p>Ans: drag</p>
1	6	<p>Which sand property allows gases to escape during pouring?</p> <p>(a) Permeability (b) Refractoriness</p> <p>(c) Cohesiveness (d) Collapsibility</p> <p>Ans: Permeability</p>
1	7	<p>Cores are used to</p> <p>(a) make hollow or a hole in a casting (b) strengthen moulding sand</p> <p>(c) support loose pieces (d) remove pattern easily</p> <p>Ans: make hollow or a hole in a casting</p>
1	8	<p>The binder used in CO₂ core making is</p> <p>(a) Clay (b) Sodium silicate</p> <p>(c) Molasses (d) Bentonite</p> <p>Ans: Sodium silicate</p>
1	9	<p>The fuel used in a cupola furnace is</p> <p>(a) Gas (b) Oil</p> <p>(c) Coke (d) Coal</p> <p>Ans: Coke</p>
1	10	<p>Electric arc furnaces are commonly used for melting</p> <p>(a) Aluminium (b) Brass</p> <p>(c) Steel (d) Zinc</p> <p>Ans: Steel</p>

UNIT	Q NO	QUESTIONS	
1	11	The main function of flux in cupola is to (a) Act as fuel (c) Increase melting temperature Ans: Remove impurities	(b) Remove impurities (d) Harden the metal
1	12	Crucible furnace is mainly used for melting (a) Cast iron (c) Non-ferrous metals Ans: Non-ferrous metals	(b) Steel (d) Pig iron
1	13	Parting sand is used to (a) Improve surface finish (c) Strengthen cores Ans: Prevent sticking of mould boxes	(b) Prevent sticking of mould boxes (d) Harden the mould
1	14	Molten iron in cupola is taken out through the (a) Top hole (c) Blower Ans: Tap hole	(b) Tap hole (d) Tuyere
1	15	Green sand is called so because (a) It is green in colour (c) It is made from plants Ans: It contains moisture	(b) It contains moisture (d) It is eco-friendly
1	16	The use of dowel pin in moulding is (a) to support loose pieces (c) to fit two parts of split pattern correctly Ans: to fit two parts of split pattern correctly	(b) to remove pattern easily (d) None of the above
1	17	Lifter is a (a) metal blade fitted with a wooden handle (c) wood or metal piece with straight edges Ans: long steel plate with a twisted and bent end	(b) long steel plate with a twisted and bent end (d) cone shaped wooden piece
1	18	Vents in moulding are provided for (a) Shrinkage (c) Rigidity Ans: Gas escape	(b) Gas escape (d) Core removal
1	19	Which type of pattern is made in two halves for easy withdrawal from the mould? (a) Single piece pattern (c) Split type pattern Ans: Split type pattern	(b) Gated pattern (d) Match plate pattern
1	20	Which tool is used for compacting the moulding sand? (a) Trowel (c) Rammer Ans: Rammer	(b) Slick (d) Lifter

UNIT	Q NO	QUESTIONS
1	21	Ability of moulding sand to withstand high temperature is called (a) Porosity (b) Strength (c) Adhesiveness (d) Refractoriness Ans: Refractoriness
1	22	A solid pattern is also known as a (a) Split pattern (b) Single piece pattern (c) Gated pattern (d) Loose piece pattern Ans: Single piece pattern
1	23	Function of riser is to (a) create hollow section (b) act as metal reservoir (c) help remove pattern (d) vent mould gases Ans: act as metal reservoir
1	24	Tool used for smoothing mould surfaces (a) Rammer (b) Vent rod (c) Trowel (d) Draw spike Ans: Trowel
1	25	Mould part through which molten metal is poured (a) Riser (b) Gate (c) Sprue (d) Runner Ans: Sprue
1	26	Casting method for cylindrical, symmetrical castings (a) gravity die casting (b) centrifugal casting (c) continuous casting (d) sand casting Ans: centrifugal casting
1	27	Sand casting is used mainly because of (a) Low cost (b) High speed (c) Precision (d) Shiny surface Ans: Low cost
1	28	Dry sand casting differs from green sand casting because (a) It uses wax (b) Sand is heated/dried (c) No pattern (d) Metal is cold Ans: Sand is heated/dried
1	29	In gravity die casting, metal is poured (a) With vacuum (b) Under pressure (c) Using gravity (d) Centrifugal force Ans: Using gravity
1	30	Best method for casting long steel billets without joints (a) Centrifugal casting (b) Gravity die casting (c) Sand casting (d) Continuous casting Ans: Continuous casting

UNIT	Q NO	QUESTIONS
1	31	Which is a common cause of casting defects? (a) Correct pouring temperature (b) Proper mould design (c) Improper venting (d) Clean molten metal Ans: Improper venting
1	32	The ratio of iron to coke in cupola furnace is (a) 35:1 (b) 10:1 (c) 25:1 (d) 2:1 Ans: 10:1
1	33	Pouring molten metal into mould to produce object is called (a) Welding (b) Forging (c) Casting (d) Rolling Ans: Casting
1	34	In pressure die casting, molten metal is forced (a) By gravity (b) By vacuum (c) Under pressure (d) Centrifugal force Ans: Under pressure
1	35	Die casting process with melting pot in machine is (a) Cold chamber process (b) Hot chamber process (c) Gravity process (d) Vacuum process Ans: Hot chamber process
1	36	Casting process using centrifugal force is (a) Die casting (b) Investment casting (c) Centrifugal casting (d) Continuous casting Ans: Centrifugal casting
1	37	Which furnace uses high frequency currents ? (a) Crucible Furnace (b) Cupola Furnace (c) Electric arc furnace (d) Induction furnace Ans: Induction furnace
1	38	Tumbling is a (a) machining process (b) casting process (c) cleaning process (d) heat treatment Ans: cleaning process
1	39	Casting defect from incomplete filling is (a) hot tears (b) shifts (c) cold shuts (d) run out Ans: cold shuts
1	40	Blowhole in casting is caused by (a) Cold metal (b) Gases trapped (c) High temperature (d) Core shifting Ans: Gases trapped

UNIT	Q NO	QUESTIONS	
1	41	Misalignment of cope and drag defect is	
		(a) Swell	(b) Shift
		(c) Drop	(d) Scab
		Ans: Shift	
1	42	Inclusion defect is caused by	
		(a) Pure metal	(b) Solidification delay
		(c) Foreign particles	(d) High pressure
		Ans: Foreign particles	
1	43	Which is Not a casting defect?	
		(a) Misrun	(b) Shrinkage cavity
		(c) Riser	(d) Blowhole
		Ans: Riser	
1	44	Method for cleaning castings	
		(a) Painting	(b) Welding
		(c) Shot blasting	(d) Anodizing
		Ans: Shot blasting	
1	45	Safety goggles protect against	
		(a) Loud noise	(b) Harmful gases
		(c) Metal splashes	(d) High temperature
		Ans: Metal splashes	
1	46	Remedy for blowholes	
		(a) Using dry sand	(b) Proper venting
		(c) Overheating metal	(d) Increasing sand hardness
		Ans: Proper venting	
1	47	PPE in foundry includes	
		(a) Goggles	(b) Gloves
		(c) Apron	(d) All of the above
		Ans: All of the above	
1	48	Hot chamber process is suitable for	
		(a) High melting point metals	(b) Ferrous metals
		(c) Low melting point metals	(d) Steel
		Ans: Low melting point metals	
1	49	Upper part of moulding box is called	
		(a) Drag	(b) Cope
		(c) Flask	(d) Rammer
		Ans: Cope	
1	50	Cupola furnace lining is made of	
		(a) Graphite	(b) Refractory bricks
		(c) Steel	(d) Limestone
		Ans: Refractory bricks	

UNIT	Q NO	QUESTIONS	
2	1	The source of heat in arc welding is:	
		(a) Gas torch	(b) Electric arc
		(c) Induction	(d) Plasma
		Ans: Electric arc	
2	2	In MIG welding, the electrode is:	
		(a) Non-consumable	(b) Tungsten
		(c) Consumable wire	(d) Coated rod
		Ans: Consumable wire	
2	3	TIG welding uses which type of electrode?	
		(a) Copper	(b) Carbon
		(c) Tungsten	(d) Mild steel
		Ans: Tungsten	
2	4	The shielding gas used in TIG welding is often:	
		(a) Hydrogen	(b) Acetylene
		(c) Oxygen	(d) Argon
		Ans: Argon	
2	5	Which arc welding method is best for thin metals?	
		(a) Carbon arc	(b) SMAW
		(c) TIG	(d) MIG
		Ans: TIG	
2	6	Gas welding uses fuel gas combined with:	
		(a) Hydrogen	(b) Argon
		(c) Oxygen	(d) Nitrogen
		Ans: Oxygen	
2	7	Which component controls gas pressure in a gas welding setup?	
		(a) Torch	(b) Hose
		(c) Regulator	(d) Cylinder
		Ans: Regulator	
2	8	The hottest flame in oxy-acetylene welding is:	
		(a) Carburizing	(b) Neutral
		(c) Oxidizing	(d) Incomplete
		Ans: Oxidizing	
2	9	Which flame has excess acetylene?	
		(a) Oxidizing	(b) Neutral
		(c) Carburizing	(d) Plasma
		Ans: Carburizing	
2	10	The tungsten electrode in TIG welding is:	
		(a) Consumable	(b) Melts during welding
		(c) Non-consumable	(d) Used for cutting
		Ans: Non-consumable	

UNIT	Q NO	QUESTIONS	
2	11	Purpose of shielding gas in TIG/MIG welding is to:	
		(a) Cool the weld	(b) Increase arc temperature
		(c) Protect weld from oxidation	(d) Clean the surface
		Ans: Protect weld from oxidation	
2	12	What is welding?	
		(a) Cutting metal	(b) Joining materials by coalescence
		(c) Bending metal	(d) Cleaning metal
		Ans: Joining materials by coalescence	
2	13	Which fuel gas is most commonly used with oxygen for gas welding?	
		(a) Propane	(b) Hydrogen
		(c) Acetylene	(d) Methane
		Ans: Acetylene	
2	14	A flame with excess oxygen is called:	
		(a) Neutral flame	(b) Oxidizing flame
		(c) Carburizing flame	(d) Normal flame
		Ans: Oxidizing flame	
2	15	Flame with equal oxygen and acetylene used for most welding:	
		(a) Oxidizing flame	(b) Carburizing flame
		(c) Neutral flame	(d) Excess fuel flame
		Ans: Neutral flame	
2	16	Colour of acetylene hoses:	
		(a) Green	(b) Blue
		(c) Black	(d) Red
		Ans: Red	
2	17	Temperature of oxy-acetylene flame is around	
		(a) 1000°C	(b) 2000°C
		(c) 3200°C	(d) 5000°C
		Ans: 3200°C	
2	18	Which gas is inert and used for shielding in welding?	
		(a) Oxygen	(b) Hydrogen
		(c) Argon or Helium	(d) Acetylene
		Ans: Argon or Helium	
2	19	Main purpose of a flux in welding:	
		(a) Add metal	(b) Prevent oxidation
		(c) Increase arc temp	(d) Cool weld quickly
		Ans: Prevent oxidation	
2	20	Which is an arc welding method?	
		(a) Oxy-acetylene	(b) Forge welding
		(c) MIG welding	(d) Resistance welding
		Ans: MIG welding	

UNIT	Q NO	QUESTIONS	
2	21	Welding method using a continuous wire electrode?	
		(a) MIG welding	(b) TIG welding
		(c) Carbon Arc	(d) SMAW
		Ans: MIG welding	
2	22	Arc welding generally requires:	
		(a) Oxygen cylinders	(b) Power source with current
		(c) Fuel gas	(d) Chemical flux
		Ans: Power source with current	
2	23	Part that mixes oxygen and acetylene gases?	
		(a) Control valve	(b) Welding torch
		(c) Pressure regulator	(d) Hose
		Ans: Welding torch	
2	24	In arc welding, arc is struck between work and:	
		(a) Transformer	(b) Electrode
		(c) Welding table	(d) Gas nozzle
		Ans: Electrode	
2	25	Arc length is the distance between:	
		(a) Two electrodes	(b) Electrode and work
		(c) Two grounding cables	(d) Workpiece and ground
		Ans: Electrode and work	
2	26	Applying hard, wear-resistant layer to a surface is:	
		(a) Soldering	(b) Brazing
		(c) Hardfacing	(d) Annealing
		Ans: Hardfacing	
2	27	Type of resistance welding:	
		(a) TIG welding	(b) Spot welding
		(c) Gas welding	(d) Arc cutting
		Ans: Spot welding	
2	28	In spot welding, weld is formed at:	
		(a) Entire joint length	(b) Individual spots
		(c) Corners only	(d) Center only
		Ans: Individual spots	
2	29	Seam welding creates:	
		(a) Single spot weld	(b) Continuous joint
		(c) Butt joint	(d) T-joint
		Ans: Continuous joint	
2	30	Heat concentration point in projection welding:	
		(a) Electrode tips	(b) Entire surface
		(c) embossments	(d) Away from joint
		Ans: embossments	

UNIT	Q NO	QUESTIONS	
2	31	Cutting metals with oxy-fuel flame:	
		(a) Arc cutting	(b) Plasma cutting
		(c) Oxy-acetylene cutting	(d) Laser cutting
		Ans: Oxy-acetylene cutting	
2	32	Resistance welding generates heat by:	
		(a) Friction	(b) Chemical reaction
		(c) Electrical resistance at joint	(d) Sunlight
		Ans: Electrical resistance at joint	
2	33	Spot welding is mainly used for:	
		(a) Thin sheets	(b) Thick rods
		(c) Heavy castings	(d) Brick walls
		Ans: Thin sheets	
2	34	Seam welding electrodes are:	
		(a) Spheres	(b) Flat plates
		(c) Rotating wheels	(d) Tubes
		Ans: Rotating wheels	
2	35	Welding process which is not resistance welding type is	
		(a) Spot welding	(b) Flash butt welding
		(c) TIG welding	(d) Projection welding
		Ans: TIG welding	
2	36	Electrodes in resistance welding are made of:	
		(a) Aluminum	(b) Copper alloys
		(c) Steel	(d) Brass
		Ans: Copper alloys	
2	37	Soldering uses filler with melting point:	
		(a) Below 450°C	(b) 800°C
		(c) Above 1000°C	(d) Same as base
		Ans: Below 450°C	
2	38	Bronze welding is also called as	
		(a) MIG welding	(b) Braze welding
		(c) Seam welding	(d) TIG welding
		Ans: Braze welding	
2	39	Non-destructive testing means:	
		(a) Breaking apart	(b) No damage to sample
		(c) Painting	(d) High temp test
		Ans: No damage to sample	
2	40	Magnetic particle test detects:	
		(a) Surface & near-surface cracks	(b) Internal defects only
		(c) Rust only	(d) Thickness only
		Ans: Surface & near-surface cracks	

UNIT	Q NO	QUESTIONS	
2	41	Radiographic test uses:	
		(a) Magnetic fields	(b) X-rays or gamma rays
		(c) Water jets	(d) Compressed air
		Ans: X-rays or gamma rays	
2	42	Ultrasonic test detects defects by:	
		(a) Sound wave reflections	(b) Spark color
		(c) Temperature changes	(d) Gas evolution
		Ans: Sound wave reflections	
2	43	Radiography test is effective for:	
		(a) Surface cracks	(b) Internal flaws
		(c) Color checks only	(d) None
		Ans: Internal flaws	
2	44	Carbon arc welding uses	
		(a) Gas torch	(b) Copper electrode
		(c) Carbon electrode	(d) Tungsten electrode
		Ans: Carbon electrode	
2	45	Slag inclusion is minimized by:	
		(a) Increasing current	(b) Cleaning between passes
		(c) Fast movement	(d) Cooling rapidly
		Ans: Cleaning between passes	
2	46	To avoid electrical shock in welding:	
		(a) Use dry gloves & good cables	(b) Work barefoot
		(c) use wet floor	(d) Use wet gloves
		Ans: Use dry gloves & good cables	
2	47	Internal voids in welding is best detected by:	
		(a) Radiographic testing	(b) Visual
		(c) Magnetic particle	(d) Dye penetrant
		Ans: Radiographic testing	
2	48	Porosity in weld is often caused by:	
		(a) Clean base	(b) Correct arc length
		(c) Contamination/moisture	(d) Proper shielding gas
		Ans: Contamination/moisture	
2	49	Cracks in weld is caused by:	
		(a) Rapid cooling	(b) Strong shielding
		(c) High humidity	(d) Thick electrodes
		Ans: Rapid cooling	
2	50	Which is Not a resistance welding process?	
		(a) Butt welding	(b) Seam welding
		(c) Forge welding	(d) Projection welding
		Ans: Forge welding	

UNIT	Q NO	QUESTIONS	
3	1	What is the primary purpose of forging?	
		(a) Machining metals	(b) Heating and casting metals
		(c) Shaping metal using compressive forces	(d) Welding metals
		Ans: Shaping metal using compressive forces	
3	2	Hot working is generally performed at	
		(a) Below room temperature	(b) Just above room temperature
		(c) Above recrystallization temperature	(d) At freezing point
		Ans: Above recrystallization temperature	
3	3	Which forging method uses repeated blows?	
		(a) Drop forging	(b) Press forging
		(c) Upset forging	(d) Roll forging
		Ans: Drop forging	
3	4	What is a key advantage of hot working?	
		(a) Produces better surface finish	(b) Increases hardness
		(c) Refines grain structure	(d) Requires no heating
		Ans: Refines grain structure	
3	5	In which operation , cross section increases at selected location?	
		(a) Drop forging	(b) Upset forging
		(c) Roll forging	(d) Press forging
		Ans: Upset forging	
3	6	What is the function of a die in press working?	
		(a) To cut sheet metal	(b) To provide shape to the metal
		(c) To support the press	(d) To apply pressure
		Ans: To provide shape to the metal	
3	7	Which operation is used to produce holes in sheet metal?	
		(a) Blanking	(b) Piercing
		(c) Notching	(d) Lancing
		Ans: Piercing	
3	8	Which operation forms a cup-like shape from sheet metal?	
		(a) Bending	(b) Curling
		(c) Drawing	(d) Piercing
		Ans: Drawing	
3	9	What is the function of a punch in press tools?	
		(a) To move the die	(b) To clamp the sheet
		(c) To force the material into the die	(d) To measure the material
		Ans: To force the material into the die	
3	10	Which of the following operations increases length and reduces cross-section?	
		(a) Bending	(b) Drawing
		(c) Upsetting	(d) Forging
		Ans: Drawing	

UNIT	Q NO	QUESTIONS	
3	11	What kind of press uses crankshaft or eccentric?	
		(a) Hydraulic press	(b) Pneumatic press
		(c) Mechanical press	(d) Toggle press
		Ans: Mechanical press	
3	12	Curling in press working is done to:	
		(a) Cut the sheet metal	(b) Make holes
		(c) Create circular edges	(d) Weld sheets
		Ans: Create circular edges	
3	13	Why is hot working more suitable than cold working for large deformations?	
		(a) It is cheaper	(b) Requires less force and avoids strain hardening
		(c) Has better surface finish	(d) Does not need heating
		Ans: Requires less force and avoids strain hardening	
3	14	How does press forging differ from hammer forging?	
		(a) Press forging uses intermittent blows	(b) Hammer forging uses slow pressure
		(c) Press forging uses continuous pressure	(d) Hammer forging uses hydraulic pressure
		Ans: Press forging uses continuous pressure	
3	15	Which process do not have cutting action?	
		(a) Piercing	(b) Bending
		(c) Blanking	(d) Shaving
		Ans: Bending	
3	16	What is the output of the drawing operation?	
		(a) Flat sheet	(b) Cup or box shape
		(c) Hole	(d) Notch
		Ans: Cup or box shape	
3	17	Which forging method uses rotating rolls with shaped grooves?	
		(a) Drop forging	(b) Press forging
		(c) Upset forging	(d) Roll forging
		Ans: Roll forging	
3	18	Which of the following is a shearing operation?	
		(a) Drawing	(b) Bending
		(c) Curling	(d) Parting off
		Ans: Parting off	
3	19	In which operation is material removed from sheet edge to produce a shape?	
		(a) Curling	(b) Notching
		(c) Trimming	(d) Lancing
		Ans: Notching	
3	20	Which component holds and guides the punch in a press?	
		(a) Die block	(b) Ram
		(c) Stripper plate	(d) Press frame
		Ans: Ram	

UNIT	Q NO	QUESTIONS
3	21	<p>Why is trimming done after drawing?</p> <p>(a) To reduce thickness (b) To clean the surface (c) To remove excess flange material (d) To smoothen the inside</p> <p>Ans: To remove excess flange material</p>
3	22	<p>How does the metal behave during hot working?</p> <p>(a) Brittle and hard (b) Soft and ductile (c) Rigid and tough (d) Cold and fragile</p> <p>Ans: Soft and ductile</p>
3	23	<p>In forging, which factor primarily determines the quality of the part?</p> <p>(a) Paint finish (b) Material color (c) Grain flow (d) Cooling rate</p> <p>Ans: Grain flow</p>
3	24	<p>Which operation creates a smooth, finished edge on a punched part?</p> <p>(a) Notching (b) Curling (c) Shaving (d) Drawing</p> <p>Ans: Shaving</p>
3	25	<p>Channel bending produces</p> <p>(a) V shapes (b) U shapes (c) L shapes (d) Holes</p> <p>Ans: U shapes</p>
3	26	<p>What type of press is preferred for slow, heavy-force operations?</p> <p>(a) Mechanical (b) Hydraulic (c) Pneumatic (d) Manual</p> <p>Ans: Hydraulic</p>
3	27	<p>What is the output product called in a blanking operation?</p> <p>(a) Scrap (b) Notch (c) Blank (d) Burr</p> <p>Ans: Blank</p>
3	28	<p>What is typically used to make a cylindrical cup from flat sheet metal?</p> <p>(a) Curling die (b) Punch and drawing die (c) Trimming tool (d) Blanking die</p> <p>Ans: Punch and drawing die</p>
3	29	<p>Why is hot working beneficial for large reductions in cross-section?</p> <p>(a) Prevents grain refinement (b) Avoids cracking (c) Reduces color change (d) Improves corrosion</p> <p>Ans: Avoids cracking</p>
3	30	<p>Which operation creates a partial cut and forms a tab in sheet metal?</p> <p>(a) Lancing (b) Curling (c) Notching (d) Blanking</p> <p>Ans: Lancing</p>

UNIT	Q NO	QUESTIONS
3	31	<p>What is the tool that makes the actual cut in a press tool?</p> <p>(a) Die (b) Ram (c) Punch (d) Stripper</p> <p>Ans: Punch</p>
3	32	<p>In a mechanical press, what stores and delivers energy for pressing?</p> <p>(a) Gearbox (b) Flywheel (c) Crankshaft (d) Piston</p> <p>Ans: Flywheel</p>
3	33	<p>Press accessories used to locate the hole which is already pierced in the blank is</p> <p>(a) Stops (b) Strippers (c) Knockouts (d) Pilots</p> <p>Ans: Pilots</p>
3	34	<p>The function of a stripper plate in press tools is to:</p> <p>(a) Align the punch (b) Support the die (c) Remove the workpiece from the punch (d) Increase pressure</p> <p>Ans: Remove the workpiece from the punch</p>
3	35	<p>The operation involving rotating rollers with grooves to shape metal is:</p> <p>(a) Smith forging (b) Upset forging (c) Roll forging (d) Die forging</p> <p>Ans: Roll forging</p>
3	36	<p>What is the main purpose of rolling in hot working?</p> <p>(a) To shape metal by casting (b) To reduce thickness of metal (c) To weld metal sheets (d) To cut metals</p> <p>Ans: To reduce thickness of metal</p>
3	37	<p>In forging, the excess squeezed out metal is called:</p> <p>(a) Flash (b) Scale (c) Burr (d) Chip</p> <p>Ans: Flash</p>
3	38	<p>Forging is mostly done at:</p> <p>(a) Room temperature only (b) Either hot or cold depending on metal (c) Below melting point but above boiling point (d) Cryogenic temperatures</p> <p>Ans: Either hot or cold depending on metal</p>
3	39	<p>Which of the following is NOT a hot working operation?</p> <p>(a) Rolling (b) Smith forging (c) Annealing (d) Upset forging</p> <p>Ans: Annealing</p>
3	40	<p>Which forging process is best for producing large parts?</p> <p>(a) Open-die forging (b) Drop forging (c) Upset forging (d) Roll forging</p> <p>Ans: Open-die forging</p>

UNIT	Q NO	QUESTIONS
3	41	Which forging operation is most suitable for making heads on bolts? (a) Upset forging (b) Drop forging (c) Roll forging (d) Press forging Ans: Upset forging
3	42	Upset forging is also called as (a) Drop forging (b) Press forging (c) Machine forging (d) Roll forging Ans: Machine forging
3	43	During forging, the metal flow is restricted by: (a) The die cavity shape (b) The temperature only (c) Hammer blows only (d) Cooling rate Ans: The die cavity shape
3	44	The main difference between drop forging and press forging is: (a) Impact force versus continuous pressure (b) Temperature used (c) Type of metal (d) Size of parts produced Ans: Impact force versus continuous pressure
3	45	Blanking is performed to (a) Produce holes inside the part (b) Produce the required outer shape of the part (c) Draw the sheet into a die cavity (d) Bend the sheet Ans: Produce the required outer shape of the part
3	46	The typical source of power for a mechanical press is: (a) Steam engine (b) Electric motor with flywheel and crank (c) Manual lever (d) Hydraulic cylinder Ans: Electric motor with flywheel and crank
3	47	In forging, the grain flow of metal : (a) Random (b) Follows the shape of part (c) Destroyed (d) Same as casting Ans: Follows the shape of part
3	48	Blanking and piercing differ mainly in: (a) Shape of the punch (b) Whether cut piece or sheet is desired product (c) Press operation speed (d) Tool material Ans: Whether cut piece or sheet is desired product
3	49	Which forging type uses hydraulic press? (a) Drop forging (b) Press forging (c) Smith forging (d) Roll forging Ans: Press forging
3	50	In press working, clearance is: (a) Space between punch and die to shear metal (b) Air gap in hydraulic system (c) Space for operator (d) None of the above Ans: Space between punch and die to shear metal

UNIT	Q NO	QUESTIONS
4	1	<p>What is the first step in powder metallurgy?</p> <p>(a) Sintering (b) Compaction (c) Powder production (d) Sizing</p> <p>Ans: Powder production</p>
4	2	<p>Atomization is used to produce metal powders by:</p> <p>(a) Grinding metal pieces (b) Heating metal (c) Breaking molten metal into fine droplets (d) Solidifying metal blocks</p> <p>Ans: Breaking molten metal into fine droplets</p>
4	3	<p>Which process is done after compaction in powder metallurgy?</p> <p>(a) Sintering (b) Electrolysis (c) Infiltration (d) Quenching</p> <p>Ans: Sintering</p>
4	4	<p>What is the main characteristic of powder metallurgy parts?</p> <p>(a) High porosity (b) Liquid phase bonding (c) High cost (d) Very heavy</p> <p>Ans: High porosity</p>
4	5	<p>Which method uses electrical current to produce metal powder?</p> <p>(a) Reduction (b) Atomization (c) Electrolytic deposition (d) Sizing</p> <p>Ans: Electrolytic deposition</p>
4	6	<p>What type of material is most commonly processed in powder metallurgy?</p> <p>(a) Plastics (b) Ceramics (c) Metals (d) Wood</p> <p>Ans: Metals</p>
4	7	<p>Sizing is done to:</p> <p>(a) Increase porosity (b) Improve dimensional accuracy (c) Change color (d) Reduce cost</p> <p>Ans: Improve dimensional accuracy</p>
4	8	<p>What is the main purpose of infiltration in powder metallurgy?</p> <p>(a) Increase porosity (b) Fill pores to improve strength (c) Reduce powder size (d) Increase melting point</p> <p>Ans: Fill pores to improve strength</p>
4	9	<p>Which of the following is a quenching medium?</p> <p>(a) Air (b) Coke (c) Acid (d) Coal</p> <p>Ans: Air</p>
4	10	<p>Heat treatment is primarily used to:</p> <p>(a) Color metals (b) Shape metals (c) Improve physical and mechanical properties (d) Remove metal properties</p> <p>Ans: Improve physical and mechanical properties</p>

UNIT	Q NO	QUESTIONS
4	11	<p>The diagram showing phase changes in steel is called:</p> <p>(a) Stress-strain diagram (b) Iron-carbon equilibrium diagram (c) Binary alloy chart (d) Heat transfer graph</p> <p>Ans: Iron-carbon equilibrium diagram</p>
4	12	<p>Annealing improves:</p> <p>(a) Brittleness (b) Ductility (c) Porosity (d) Hardness</p> <p>Ans: Ductility</p>
4	13	<p>Which process is used to reduce hardness and relieve stress?</p> <p>(a) Tempering (b) Quenching (c) Sintering (d) Cold working</p> <p>Ans: Tempering</p>
4	14	<p>What is the purpose of hardening?</p> <p>(a) Make the metal soft (b) Reduce cost (c) Increase hardness (d) Increase corrosion</p> <p>Ans: Increase hardness</p>
4	15	<p>What happens during quenching?</p> <p>(a) Metal is cooled rapidly (b) Metal is bent (c) Metal is compacted (d) Metal is sintered</p> <p>Ans: Metal is cooled rapidly</p>
4	16	<p>Normalizing produces:</p> <p>(a) Brittle structure (b) Fine and uniform grain structure (c) Porous surface (d) Rough finish</p> <p>Ans: Fine and uniform grain structure</p>
4	17	<p>Which structure forms when steel is quenched rapidly?</p> <p>(a) Ferrite (b) Pearlite (c) Martensite (d) Austenite</p> <p>Ans: Martensite</p>
4	18	<p>Which of these processes is NOT part of heat treatment?</p> <p>(a) Annealing (b) Tempering (c) Compacting (d) Hardening</p> <p>Ans: Compacting</p>
4	19	<p>Which gas is commonly used in the reduction method to produce metal powder?</p> <p>(a) Oxygen (b) Hydrogen (c) Carbon dioxide (d) Nitrogen</p> <p>Ans: Hydrogen</p>
4	20	<p>Compacting is carried out:</p> <p>(a) Before sintering (b) After sizing (c) After quenching (d) Before electrolysis</p> <p>Ans: Before sintering</p>

UNIT	Q NO	QUESTIONS
4	21	<p>Porosity in powder metallurgy parts is due to:</p> <p>(a) High hardness (b) High temperature (c) Unfused powder particles (d) Water content</p> <p>Ans: Unfused powder particles</p>
4	22	<p>Which of the following is not a purpose of heat treatment?</p> <p>(a) To reduce hardness (b) To improve machinability (c) To change color (d) To relieve internal stress</p> <p>Ans: To change color</p>
4	23	<p>In powder metallurgy, which factor most affects the final density of the product?</p> <p>(a) Sintering time (b) Powder particle size (c) Cooling medium (d) Surface finish</p> <p>Ans: Powder particle size</p>
4	24	<p>Powder metallurgy is best suited for:</p> <p>(a) Large castings (b) Complex, small parts (c) Wood structures (d) Plastic molding</p> <p>Ans: Complex, small parts</p>
4	25	<p>What is the main cooling medium mostly used in quenching?</p> <p>(a) Mercury (b) Oil (c) Wood (d) Air only</p> <p>Ans: Oil</p>
4	26	<p>The eutectoid composition of steel contains what percentage of carbon?</p> <p>(a) 0.30% (b) 0.60% (c) 0.80% (d) 1.20%</p> <p>Ans: 0.80%</p>
4	27	<p>Which heat treatment process involves slow cooling in a furnace?</p> <p>(a) Tempering (b) Hardening (c) Annealing (d) Quenching</p> <p>Ans: Annealing</p>
4	28	<p>What is the critical temperature for eutectoid transformation in steel?</p> <p>(a) 727°C (b) 912°C (c) 1147°C (d) 1536°C</p> <p>Ans: 727°C</p>
4	29	<p>In heat treatment, what is the purpose of soaking period?</p> <p>(a) To cool rapidly (b) To attain uniform temperature (c) To pressurize metal (d) To quench faster</p> <p>Ans: To attain uniform temperature</p>
4	30	<p>Which process involves heating metal to a temperature below its melting point to bond particles?</p> <p>(a) Annealing (b) Sintering (c) Hardening (d) Quenching</p> <p>Ans: Sintering</p>

UNIT	Q NO	QUESTIONS
4	31	<p>What is the main effect of tempering on hardened steel?</p> <p>(a) Increase hardness (b) Decrease toughness (c) Reduce brittleness (d) Increase porosity</p> <p>Ans: Reduce brittleness</p>
4	32	<p>Which powder metallurgy process improves surface finish and dimensional accuracy?</p> <p>(a) Atomization (b) Sintering (c) Sizing (d) Compaction</p> <p>Ans: Sizing</p>
4	33	<p>Which quenching medium cools steel most rapidly?</p> <p>(a) Oil (b) Air (c) Water (d) Brine</p> <p>Ans: Brine</p>
4	34	<p>Which heat treatment improves machinability by softening metals?</p> <p>(a) Hardening (b) Annealing (c) Tempering (d) Normalizing</p> <p>Ans: Annealing</p>
4	35	<p>Which heat treatment process involves heating metal to a high temperature then cooling in still air?</p> <p>(a) Annealing (b) Normalizing (c) Hardening (d) Tempering</p> <p>Ans: Normalizing</p>
4	36	<p>Which of these is NOT a step in powder metallurgy?</p> <p>(a) Compaction (b) Sintering (c) Forging (d) Sizing</p> <p>Ans: Forging</p>
4	37	<p>Which heat treatment process increases hardness and strength but reduces ductility?</p> <p>(a) Annealing (b) Normalizing (c) Hardening (d) Tempering</p> <p>Ans: Hardening</p>
4	38	<p>Which quenching medium cools steel slowest?</p> <p>(a) Water (b) Oil (c) Air (d) Brine</p> <p>Ans: Air</p>
4	39	<p>What does sintering temperature depend on?</p> <p>(a) Powder size (b) Melting point of the metal (c) Cooling medium (d) Alloy composition</p> <p>Ans: Melting point of the metal</p>
4	40	<p>The pressure applied during compacting affects the</p> <p>(a) Colour (b) Chemical composition (c) Density (d) Melting point</p> <p>Ans: Density</p>

UNIT	Q NO	QUESTIONS
4	41	<p>What microstructure forms at eutectoid composition when cooled slowly?</p> <p>(a) Martensite (b) Pearlite (c) Cementite (d) Austenite</p> <p>Ans: Pearlite</p>
4	42	<p>Which heat treatment involves heating steel to below the lower critical temperature?</p> <p>(a) Annealing (b) Normalizing (c) Tempering (d) Sintering</p> <p>Ans: Tempering</p>
4	43	<p>What is the reason for using vacuum atmosphere during sintering?</p> <p>(a) To increase porosity (b) To prevent oxidation (c) To reduce hardness (d) To cool faster</p> <p>Ans: To prevent oxidation</p>
4	44	<p>Which of the following is NOT a common quenching medium?</p> <p>(a) Brine (b) Oil (c) Air (d) Mercury</p> <p>Ans: Mercury</p>
4	45	<p>What happens to metal powder during compaction?</p> <p>(a) Particles fuse completely (b) Particles are pressed into a shape (c) Particles melt (d) Particles oxidize</p> <p>Ans: Particles are pressed into a shape</p>
4	46	<p>Which heat treatment process is used to remove internal stresses?</p> <p>(a) Quenching (b) Annealing (c) Hardening (d) Austenizing</p> <p>Ans: Annealing</p>
4	47	<p>What type of powder metallurgy part design is preferred?</p> <p>(a) With sharp corners (b) With uniform thickness (c) With thin sections only (d) With complex internal threads</p> <p>Ans: With uniform thickness</p>
4	48	<p>What is the role of carbon in steel?</p> <p>(a) Increase corrosion resistance (b) Increase hardness and strength (c) Decrease density (d) Improve electrical conductivity</p> <p>Ans: Increase hardness and strength</p>
4	49	<p>Which component in iron-carbon diagram has the highest carbon content?</p> <p>(a) Ferrite (b) Pearlite (c) Cementite (d) Austenite</p> <p>Ans: Cementite</p>
4	50	<p>The "green compact" has:</p> <p>(a) High strength (b) High density (c) Low strength and is fragile (d) A green color</p> <p>Ans: Low strength and is fragile</p>

UNIT	Q NO	QUESTIONS
5	11	Device to transmit drive from drive plate to workpiece? (a) Bolt (b) Mandrel (c) Clamp (d) Dog or Carrier Ans: Dog or Carrier
5	12	Cast iron plate with two faces at right angle to support workpieces is: (a) Angle plate (b) Face plate (c) Drive plate (d) V-block Ans: Angle plate
5	13	Device used to divide periphery of workpiece into equal divisions? (a) Tailstock (b) Indexing head (c) Chuck (d) Vice Ans: Indexing head
5	14	Shaft used for mounting and driving milling cutter is an: (a) Mandrel (b) Arbor (c) Sleeve (d) Socket Ans: Arbor
5	15	Device used to connect tool shank to machine spindle of different taper? (a) Adapter (b) Collet (c) Arbor (d) Carrier Ans: Adapter
5	16	A three-jaw chuck is also known as: (a) Independent chuck (b) Self-centering chuck (c) Combination chuck (d) Magnetic chuck Ans: Self-centering chuck
5	17	A follower rest is attached to: (a) Headstock (b) Tailstock (c) Bed (d) Saddle/Carriage Ans: Saddle/Carriage
5	18	Steady rests are mounted on: (a) Lathe bed (b) Machine table (c) Tool post (d) Workbench Ans: Lathe bed
5	19	Face plates are attached to: (a) Lathe spindle (b) Tool post (c) Machine table (d) Workbench Ans: Lathe spindle
5	20	Four-way tool posts allow: (a) Mounting four tools for quick change (b) Holding four workpieces (c) Measuring tool wear (d) Adjusting spindle speed Ans: Mounting four tools for quick change

UNIT	Q NO	QUESTIONS
5	21	<p>Collets provide:</p> <p>(a) Irregular holding force (b) Loose gripping (c) Uniform gripping around tool shank (d) Clamping one side only</p> <p>Ans: Uniform gripping around tool shank</p>
5	22	<p>Purpose of sleeve in tooling is to:</p> <p>(a) Clamp tools (b) Hold workpiece (c) Cut materials (d) Adapt tool shank sizes for fitting</p> <p>Ans: Adapt tool shank sizes for fitting</p>
5	23	<p>Angle plate is used to:</p> <p>(a) Grind surfaces (b) Hold workpieces at right angles (c) Hold cutting tools (d) Measure lengths</p> <p>Ans: Hold workpieces at right angles</p>
5	24	<p>A four-jaw chuck is also known as:</p> <p>(a) Self-centering chuck (b) Universal chuck (c) Independent chuck (d) Collet chuck</p> <p>Ans: Independent chuck</p>
5	25	<p>Device mainly used to clamp flat surface workpieces?</p> <p>(a) Machine Vice (b) Chuck (c) Mandrel (d) Collet</p> <p>Ans: Machine Vice</p>
5	26	<p>Power tools are classified based on:</p> <p>(a) Color (b) Power source (c) Size (d) Weight</p> <p>Ans: Power source</p>
5	27	<p>Portable tool used for drilling holes in materials is:</p> <p>(a) Hand drill (b) Angle grinder (c) Jigsaw (d) Impact wrench</p> <p>Ans: Hand drill</p>
5	28	<p>Drill providing short, rapid reciprocating action for concrete is:</p> <p>(a) Hand drill (b) Hammer Drill (c) Screwdriver (d) Circular saw</p> <p>Ans: Hammer Drill</p>
5	29	<p>Handheld power tool used for grinding, cutting, polishing is:</p> <p>(a) Chain saw (b) Jigsaw (c) Impact wrench (d) Angle Grinder</p> <p>Ans: Angle Grinder</p>
5	30	<p>Tool delivering high torque to tighten/loosen bolts is:</p> <p>(a) Impact wrench (b) Hammer drill (c) Circular saw (d) Hand drill</p> <p>Ans: Impact wrench</p>

UNIT	Q NO	QUESTIONS
5	31	<p>Power saw using toothed circular blade to cut is:</p> <p>(a) Jigsaw (b) Chain saw (c) Circular saw (d) Reciprocating cutter</p> <p>Ans: Circular saw</p>
5	32	<p>Saw with reciprocating blade to cut curves is:</p> <p>(a) Circular saw (b) Chain saw (c) Jigsaw (d) Table saw</p> <p>Ans: Jigsaw</p>
5	33	<p>Portable saw cutting with rotating chain teeth is:</p> <p>(a) Circular saw (b) Jigsaw (c) Chain saw (d) Hand saw</p> <p>Ans: Chain saw</p>
5	34	<p>Angle grinder uses:</p> <p>(a) Saw chain (b) Reciprocating blade (c) Rotating abrasive disc (d) Drill bit</p> <p>Ans: Rotating abrasive disc</p>
5	35	<p>Power screwdrivers are used for:</p> <p>(a) Drilling holes (b) Cutting metal (c) Driving screws efficiently (d) Grinding surfaces</p> <p>Ans: Driving screws efficiently</p>
5	36	<p>Power tool NOT primarily a cutting tool:</p> <p>(a) Circular saw (b) Jigsaw (c) Impact wrench (d) Chain saw</p> <p>Ans: Impact wrench</p>
5	37	<p>Angle grinder is named so because:</p> <p>(a) Cuts at an angle only (b) Cutting head mounted at angle to motor (c) Grinds angles on workpieces (d) Invented by Mr. Angle</p> <p>Ans: Cutting head mounted at angle to motor</p>
5	38	<p>Turret indexing enables:</p> <p>(a) Cooling tools (b) Faster spindle rotation (c) Automatic clamping (d) Quick selection of multiple tools</p> <p>Ans: Quick selection of multiple tools</p>
5	39	<p>Electrical screwdrivers differ from power screwdrivers by:</p> <p>(a) Being lighter and lighter duty (b) Being heavier and powerful (c) Not used for screws (d) Used only for cutting</p> <p>Ans: Being lighter and lighter duty</p>
5	40	<p>Jigsaws use which type of cutter?</p> <p>(a) Abrasive (b) Circular (c) Reciprocating (d) Milling</p> <p>Ans: Reciprocating</p>

UNIT	Q NO	QUESTIONS
5	41	Chain saw is used for: (a) Cutting trees/logs (c) Polishing metals Ans: Cutting trees/logs
		(b) Drilling concrete (d) Tightening bolts
5	42	What holds straight-shank drills in drilling machine? (a) Sleeve (c) Drill chuck Ans: Drill chuck
		(b) Socket (d) Adaptor
5	43	Best power tool for cutting metal pipes? (a) Angle grinder (c) Chain saw Ans: Angle grinder
		(b) Jigsaw (d) Hammer drill
5	44	Best tool for curved cut-out in middle of wooden board? (a) Circular saw (c) Jigsaw Ans: Jigsaw
		(b) Chain saw (d) Impact driver
5	45	Device to fit smaller taper shank tool into larger spindle taper hole? (a) Socket (c) Sleeve Ans: Sleeve
		(b) Collet (d) Chuck
5	46	Device to fit larger taper shank tool into smaller spindle taper hole? (a) Sleeve (c) Collet Ans: Socket
		(b) Socket (d) Catch plate
5	47	An arbor is typically mounted on: (a) Workpiece (c) Machine table Ans: Spindle
		(b) Spindle (d) Tool post
5	48	Reciprocating cutters operate by: (a) Oscillating sideways only (c) Moving back and forth to cut Ans: Moving back and forth to cut
		(b) Rotating continuously (d) Drilling holes
5	49	Which device holds tools for quick change on lathe? (a) Machine vice (c) Face plate Ans: Four-way tool post
		(b) Mandrel (d) Four-way tool post
5	50	A device mounted on a lathe spindle to hold and rotate the workpiece is (a) Tailstock (c) Lead screw Ans: Chuck
		(b) Tool post (d) Chuck

UNIT 1 FOUNDRY TECHNOLOGY

PART - B

2 Marks

1. What is a pattern?
2. List any four materials used for making patterns.
3. Name any four types of pattern allowances.
4. Write any four properties of moulding sand.
5. Name the main zones of a cupola furnace.
6. What is a core in foundry?
7. What is permeability of moulding sand?
8. Name any four moulding tools.
9. What is the function of a riser?
10. What is continuous casting?
11. What are the two types of pressure die casting?
12. List two causes for blowholes in castings.
13. Give remedies to avoid cold shut defect in castings.
14. List two cleaning methods of casting.
15. What is the use of a crucible furnace?

PART - C

3 Marks

1. Explain any two allowances given to a pattern.
2. Explain the importance of vent holes in moulding.
3. Differentiate between green sand casting and dry sand casting.
4. Write short notes on centrifugal casting.
5. Write the causes and remedies of shrinkage cavity.
6. Explain the function of parting sand.
7. List the steps in CO₂ core making process.
8. Write short notes on tumbling.
9. Write any four safety practices in foundry.
10. Write a short note on gravity die casting.

UNIT 2 WELDING TECHNOLOGY

PART - B

2 Marks

1. Define arc welding.
2. Name any two equipments used in arc welding.
3. List any four arc welding methods.
4. What is TIG welding? What is the electrode material in TIG welding?
5. Write any two gas combinations used in gas welding.
6. What is a neutral flame?
7. List the types of resistance welding.
8. What is hard facing?
9. Define resistance welding.
10. Write two examples of welding defects.
11. What is non-destructive testing of welds?
12. What is arc length?
13. What is the function of flux in welding?
14. List out any two non-destructive testing methods.
15. What is the function of regulators in gas welding?

PART - C

3 Marks

1. Differentiate between MIG and TIG welding
2. What is the difference between oxidizing and carburizing flames in gas welding?
3. Compare soldering and brazing.
4. Write short notes on shielding gas in welding.
5. Write short notes on equipments used in gas welding.
6. Write short notes on safety precautions in welding.
7. Differentiate between spot welding and seam welding.
8. Write the causes and remedies of slag inclusion.
9. Explain the causes and remedies of cracks in welding.
10. Write short notes on radiographic testing.

UNIT 3 FORGING AND PRESS WORKING**PART - B****2 Marks**

1. What is hot working?
2. List out any two advantages of hot working.
3. Give two examples of hot working operations.
4. What is drop forging?
5. What is rolling?
6. List out any two types of press.
7. List out any two accessories used in press working.
8. What is upset forging?
9. What is curling?
10. List out any four shearing operations.
11. What is blanking in press work?
12. What is shaving in press work?
13. Define the term "recrystallization temperature."
14. What is the purpose of providing pressure pads in press work?
15. What is notching?

PART - C**3 Marks**

1. Write down the advantages of hot working.
2. Compare drop forging and press forging.
3. What is the difference between upsetting and drawing down?
4. Differentiate between blanking and piercing.
5. Write short notes on bending operation.
6. Write short notes on hydraulic press.
7. Mention the uses of the following accessories in a press.
a) Pilot b) Knock out.
8. What is a die and punch in a press?
9. What is (i) Cutting off and (ii) Trimming?
10. List out the advantages of press forging.

UNIT 4 POWDER METALLURGY AND HEAT TREATMENT

PART - B

2 Marks

1. What is powder metallurgy?
2. Write any two methods used for manufacturing metal powders?
3. What is compacting in powder metallurgy?
4. Mention any two secondary finishing operations in powder metallurgy.
5. What is a green compact?
6. Name the three zones in a sintering furnace.
7. List out four heat treatment processes.
8. What is hypo eutectoid steel?
9. What is critical temperature?
10. Name any two quenching media.
11. What is the purpose of annealing?
12. What is normalizing?
13. What is quenching?
14. What is Iron-Carbon equilibrium diagram?
15. Mention two phases found in the iron-carbon equilibrium diagram.

PART - C

3 Marks

1. List out the step by step procedure of making products in powder metallurgy.
2. Write three design rules for powder metallurgy parts.
3. Write short notes on infiltration process in powder metallurgy.
4. Write short notes on mechanical properties of powder metallurgy products.
5. How full annealing is done?
6. Why tempering is necessary after hardening?
7. Write short notes on atomization in powder metallurgy.
8. Name the different types of tempering process.
9. Write the purpose of heat treatment.
10. How hardening is done?

UNIT 5 WORK HOLDING, TOOL HOLDING DEVICES AND POWER TOOLS

PART - B

2 Marks

1. List out any four work holding devices.
2. What are the types of chuck?
3. What is the use of face plate?
4. What is the use of an arbor?
5. List out any four tool holding devices.
6. Mention the application of V-block.
7. What is the purpose of indexing head?
8. Where is a mandrel used?
9. What is the use of a sleeve in tool holding?
10. Mention the use of a drill chuck.
11. Write the names of any four power tools.
12. Write the uses of jigsaw.
13. Write the power sources of an impact wrench.
14. Name the different types of discs that can be used in angle grinders.
15. Name the two types of motion in a hammer drill.

PART - C

3 Marks

1. Compare steady rest and follower rest.
2. Explain the need of a 4 jaw chuck over 3 jaw chuck.
3. Write short notes on (i)Machine vice and (ii)T-bolts and clamp.
4. Differentiate between four-way tool post and turret indexing head.
5. Write short notes on angle plate.
6. Write short notes on chain saw and give its uses.
7. What is an adaptor? Mention its use.
8. Write short notes on reciprocating cutter.
9. Discuss the importance of collets in precision machining.
10. What is a circular saw? Give its uses.