CENTRAL POLYTECHNIC COLLEGE,THARAMANI – 600113.

(An Autonomous Institution)

DEPARTMENT OF AUTOMOBILE ENGINEERING (SANDWICH)

QUESTION BANK

EAE31010 - MANUFACTURING TECHNOLOGY I

U.NO	Q NO	QUESTIONS
1	1	What is the purpose of a jolt machine in moulding operations? (a) Melting the metal (b) Compacting the sand around the pattern (c) Drying the mould (d) Removing the pattern from the mould **Ans:(B) Compacting the sand around the pattern**
1	2	How does a jolt machine compact the moulding sand? (a) By applying hydraulic pressure (b) By rotating the flask (c) By lifting and dropping the flask quickly (d) By vibration only **Ans:(C) By lifting and dropping the flask quickly**
1	3	Name one machine used for moulding. (a) Lathe (b) Jolt machine (c) Grinder (d) Press **Ans:(B) Jolt machine**
1	4	Jolting is a process of: (a) Vibration (b) Raising and dropping the flask (c) Rotating the flask (d) Heating **Ans:(B) Raising and dropping the flask**
1	5	Which machine gives dense sand ramming at top? (a) Top squeezer (b) Bottom squeezer (c) Sand slinger (d) Jolt machine **Ans:(A) Top squeezer**
1	6	In sand slinger, sand is compacted by: (a) Hand (b) Roller (c) Impact of high velocity sand (d) Vibration **Ans:(C) Impact of high velocity sand**
1	7	The core is used to: (a) Strengthen mould (b) Make holes in castings (c) Remove riser (d) Polish casting **Ans:(B) Make holes in castings**
1	8	A projection in pattern for core support is called? (a) Boss (b) Rib (c) Core print (d) Lug **Ans:(C) Core print**
1	9	Core sand must have high (a) Strength (b) Refractoriness (c) Hardness (d) Machinability **Ans:(B) Refractoriness**

U.NO	Q NO	QUESTIONS
1	10	Name one binder for core sand: (a) Resin (b) Oil (c) Cement (d) Clay **Ans:(B) Oil**
1	11	Which gas is used in CO_2 core making process? (a) Oxygen (b) Nitrogen (c) Carbon dioxide (d) Argon **Ans:(C) Carbon dioxide**
1	12	Which furnace is used for melting iron? (a) Cupola furnace (b) Blast furnace (c) Electric arc furnace (d) Induction furnace **Ans:(A) Cupola furnace**
1	13	The ratio of iron to coke in cupola is: (a) 1:10 (b) 10:1 (c) 5:1 (d) 20:1 **Ans:(B) 10:1**
1	14	Which casting uses thin shell moulds? (a) Shell mould casting (b) Investment casting (c) Electric arc furnace (d) Induction furnace **Ans:(A) Shell mould casting**
1	15	What is used as pattern material in investment casting? (a) Plastic (b) Wax (c) Wood (d) Metal **Ans:(B) Wax**
1	16	Hot chamber die casting uses: (a) Separate melting chamber (b) Integral melting chamber (c) Sand mould (d) Ceramic mould **Ans:(B) Integral melting chamber**
1	17	Gravity die casting uses: (a) Separate melting chamber (b) Permanent moulds (c) Sand mould (d) Ceramic mould **Ans:(B) Permanent moulds**
1	18	Which casting method produces hollow pipes without core? (a) Separate melting chamber (b) Centrifugal casting (c) Sand mould (d) Ceramic mould **Ans:(B) Centrifugal casting**

U.NO	Q NO	QUESTIONS
1	19	Continuous casting produces: (a) Long products of uniform section (b) Centrifugal casting (c) Sand mould (d) Ceramic mould **Ans:(A) Long products of uniform section**
1	20	Blowholes are caused by: (a) Excess moisture in sand (b) Centrifugal casting (c) Sand mould (d) Ceramic mould **Ans:(A) Excess moisture in sand**
1	21	Misalignment of mould sections causes: (a) Excess moisture in sand (b) Shifts (c) Sand mould (d) Ceramic mould **Ans:(B) Shifts**
1	22	Which casting defect appears as thin projection? (a) Fins (b) Shifts (c) Sand mould (d) Ceramic mould **Ans:(A) Fins**
1	23	Cold shut is caused by: (a) Fins (b) Low pouring temperature (c) Sand mould (d) Ceramic mould **Ans:(B) Low pouring temperature**
1	24	Core sand must have good: (a) Permeability (b) Low pouring temperature (c) Sand mould (d) Ceramic mould **Ans:(A) Permeability**
1	25	Which binder is used in CO_2 process? (a) Sodium silicate (b) Low pouring temperature (c) Sand mould (d) Ceramic mould **Ans:(A) Sodium silicate**
1	26	Which part of the jolt machine lifts and drops the flask? (a) Ejector rod (b) Rammer plate (c) Eccentric cam or pneumatic cylinder (d) Core print **Ans:(C) Eccentric cam or pneumatic cylinder**
1	27	Which combination is used for uniform sand compaction in moulding? (a) Jolt and grind (b) Squeeze and polish (c) Jolt and squeeze (d) Grind and lift **Ans:(C) Jolt and squeeze**

U.NO	Q NO	QUESTIONS
1	28	What happens when CO_2 is passed through the sand-sodium silicate mixture? (a) It melts the sand (b) It softens the mixture (c) It hardens the mixture (d) It evaporates the sand **Ans:(C) It hardens the mixture**
1	29	Which of the following is NOT a desirable property of core sand? (a) Good collapsibility (b) High permeability (c) Low refractoriness (d) Sufficient strength **Ans:(C) Low refractoriness**
1	30	Why is collapsibility important in core sand? (a) For better metal flow (b) To allow easy removal after casting (c) To increase core hardness (d) To reduce melting point of metal **Ans:(B) To allow easy removal after casting**
1	31	What is the primary force used in gravity die casting to fill the mould? (a) Centrifugal force (b) Compressed air (c) Gravity (d) Vacuum suction **Ans:(C) Gravity**
1	32	Which product is made by centrifugal casting? (a) Engine block (b) Thin sheet metal (c) Hollow metal pipes (d) Complex turbine blades **Ans:(C) Hollow metal pipes**
1	33	Which of the following is NOT a main component of a cupola furnace? (a) Stack (b) Tuyeres (c) Core box (d) Charging door **Ans:(C) Core box**
1	34	What is the function of the tuyeres in a cupola furnace? (a) To introduce fuel (b) To allow gases to escape (c) To supply air blast for combustion (d) To remove molten metal **Ans:(C) To supply air blast for combustion**
1	35	What materials are charged into the cupola furnace? (a) Sand, clay, and water (b) Coke, limestone, and metal scrap (c) Wax and ceramic slurry (d) Only molten metal **Ans:(B) Coke, limestone, and metal scrap**
1	36	How is molten metal collected in a cupola furnace? (a) It flows out through a tap hole at the bottom (b) It evaporates inside the stack (c) It is absorbed by the coke bed (d) It is removed through the charging door **Ans:(A) It flows out through a tap hole at the bottom**

U.NO	Q NO	QUESTIONS
1	37	What is the working principle of a cupola furnace? (a) Melting by electrical resistance heating (b) Melting by continuous fuel combustion with forced air blast (c) Melting by induction heating (d) Melting by direct sunlight concentration **Ans:(B) Melting by continuous fuel combustion with forced air blast**
1	38	In shell mould casting, the shell mould is made using which material? (a) Molten wax (b) Sand mixed with thermosetting resin (c) Plaster of Paris (d) Graphite powder **Ans:(B) Sand mixed with thermosetting resin**
1	39	Why is preheating of the metal pattern necessary in shell mould casting? (a) To prevent metal solidification (b) To ensure proper resin curing and shell formation (c) To melt the resin (d) To reduce mould hardness **Ans:(B) To ensure proper resin curing and shell formation**
1	40	Investment casting is also known as: (a) Lost foam casting (b) Lost wax casting (c) Permanent mould casting (d) Die casting **Ans:(B) Lost wax casting**
1	41	Which of the following gives better dimensional accuracy? (a) Green sand casting (b) Shell mould casting (c) Investment casting (d) Die casting **Ans:(C) Investment casting**
1	42	Which casting process is suitable for producing small and intricate components? (a) Die casting (b) Investment casting (c) Shell mould casting (d) Gravity die casting **Ans:(B) Investment casting**
1	43	The typical thickness of a shell mould in shell mould casting is about: (a) 2–4 mm (b) 10–15 mm (c) 20–25 mm (d) 1–2 cm **Ans:(A) 2–4 mm**
1	44	Which of the following is the main material used for shell moulding? (a) Green sand (b) Resin-coated sand (c) Plaster of Paris (d) Silica gel **Ans:(B) Resin-coated sand**
1	45	Which of the following is NOT an advantage of shell moulding? (a) Excellent surface finish (b) High dimensional accuracy (c) Suitable for mass production (d) Very low tooling cost **Ans:(D) Very low tooling cost**

U.NO	Q NO	QUESTIONS
1	46	If the pattern material in shell mould casting is not properly heated, what will y happen? (a) The shell will become too thick (b) The resin will not cure properly and shell will be weak (c) The shell will overharden and crack (d) The metal flow will stop **Ans:(B) The resin will not cure properly and shell will be weak**
1	47	The presence of non-metallic particles (like slag or sand) inside the casting indicates: (a) Hot tear (b) Cold shut (c) Inclusions (d) Porosity **Ans:(C) Inclusions**
1	48	A casting shows small, round cavities on its surface. What is the defect? (a) Shrinkage cavity (b) Blowholes (c) Cold shut (d) Misrun **Ans:(B) Blowholes**
1	49	Shell moulding is best suited for which of the following production types? (a) Prototype casting (b) High-volume, mass production (c) Repair casting (d) One-off custom casting **Ans:(B) High-volume, mass production**
1	50	If the mould halves are shifted out of alignment, the defect produced is: (a) Hot tear (b) Mismatch (c) Cold shut (d) Shrinkage **Ans:(B) Mismatch**
1	51	In the CO_2 core-making process, the binder commonly used is: (a) Clay (b) Sodium silicate (c) Cement (d) Bentonite **Ans:(B) Sodium silicate**
1	52	The main purpose of a core in casting is to produce: (a) External projections (b) Internal cavities (c) Surface finish (d) Risers **Ans:(B) Internal cavities**
1	53	A sand slinger compacts moulding sand using: (a) Hydraulic pressure (b) Centrifugal force (c) Vacuum pressure (d) Magnetic force **Ans:(B) Centrifugal force**
1	54	In a cupola furnace, limestone is mainly used as: (a) Fuel (b) Binder (c) Flux (d) Coolant **Ans:(C) Flux**

U.NO	Q NO	QUESTIONS
1	55	Cold chamber die casting is commonly used for: (a) Aluminium alloys (b) Cast iron only (c) Steel only (d) Pure iron **Ans:(A) Aluminium alloys**
2	1	Heat treatment modifies: (a) Shape (b) Properties of metals (c) Colour (d) Weight **Ans:(B) Properties of metals**
2	2	Main heat treatment stages : (a) Cooling only (b) Heating, soaking, cooling (c) Heating only (d) Forging, rolling **Ans:(B) Heating, soaking, cooling**
2	3	Property improved by annealing: (a) Hardness (b) Ductility (c) Brittleness (d) Magnetism **Ans:(B) Ductility**
2	4	what is the Purpose of normalizing? (a) Increase brittleness (b) Refine grain structure (c) Reduce temperature (d) Change colour **Ans:(B) Refine grain structure**
2	5	What is quenching? (a) Slow cooling (b) Rapid cooling (c) Heating slowly (d) Forging operation **Ans:(B) Rapid cooling**
2	6	Medium used for quenching? (a) Steam (b) Sand (c) Brine solution (d) Carbon dioxide **Ans:(C) Brine solution**
2	7	what is the Purpose of tempering? (a) Reduce ductility (b) Reduce brittleness (c) Increase hardness only (d) Remove colour **Ans:(B) Reduce brittleness**
2	8	Flame hardening is mainly used to: (a) Harden the entire metal component (b) Harden only the surface layer (c) Soften the metal (d) Change the colour **Ans:(B) Harden only the surface layer**

U.NO	Q NO	QUESTIONS
2	9	Which is the allotropic form of iron at high temperature? (a) Alpha iron (b) Gamma iron (c) Delta iron (d) Cementite **Ans:(C) Delta iron**
2	10	What is the structure of pure iron below 768°C? (a) Gamma iron (b) Alpha iron (c) Delta iron (d) Austenite **Ans:(B) Alpha iron**
2	11	In steel, which element acts as the solute? (a) Iron (b) Carbon (c) Chromium (d) Nickel **Ans:(B) Carbon**
2	12	Which is the solid solution in steel? (a) Bainite (b) Pearlite (c) Martensite (d) Austenite **Ans:(D) Austenite**
2	13	Which microstructure consists of ferrite and cementite? (a) Pearlite (b) Martensite (c) Austenite (d) Bainite **Ans:(A) Pearlite**
2	14	Which is the hard and brittle phase in steel? (a) Ferrite (b) Pearlite (c) Cementite (d) Austenite **Ans:(C) Cementite**
2	15	Which structure is formed by rapid cooling of austenite? (a) Ferrite (b) Pearlite (c) Martensite (d) Bainite **Ans:(C) Martensite**
2	16	What is the carbon content of eutectoid steel? (a) 0.002 (b) 0.008 (c) 0.015 (d) 0.02 **Ans:(B) 0.008**
2	17	Which alloy contains more than 2% carbon? (a) Wrought iron (b) Cast iron (c) Mild steel (d) Tool steel **Ans:(B) Cast iron**

U.NO	Q NO	QUESTIONS
2	18	Which diagram is mainly used in heat treatment of steels? (a) Stress-strain diagram (b) Iron-carbon equilibrium diagram (c) Phase transformation diagram (d) Load vs. deformation diagram **Ans:(B) Iron-carbon equilibrium diagram**
2	19	What is the lower critical temperature (A_1) in steel? (a) 400°C (b) 723°C (c) 910°C (d) 1539°C **Ans:(B) 723°C**
2	20	Which heat treatment involves heating above critical temperature followed by slow cooling? (a) Annealing (b) Normalizing (c) Hardening (d) Quenching **Ans:(A) Annealing**
2	21	Which heat treatment involves heating above critical temperature followed by air cooling? (a) Annealing (b) Normalizing (c) Quenching (d) Aging **Ans:(B) Normalizing**
2	22	What is typically plotted on the horizontal axis of the Iron–Carbon diagram? (a) Carbon content (%) (b) Temperature (°C) (c) Hardness (d) Time **Ans:(A) Carbon content (%)**
2	23	After hardening, what is done? (a) Normalizing (b) Tempering (c) Forging (d) Annealing **Ans:(B) Tempering**
2	24	The eutectoid point on the diagram corresponds to: (a) 0.8% C at 723°C (b) 4.3% C at 1147°C (c) 6.7% C at 1150°C (d) 2% C at 910°C **Ans:(A) 0.8% C at 723°C**
2	25	Flame hardening is used for: (a) Plastics (b) Gear teeth (c) Wood (d) Aluminium **Ans:(B) Gear teeth**
2	26	A mechanical press operates based on the energy stored in a: (a) Hydraulic fluid (b) Flywheel (c) Electric motor (d) Pneumatic cylinder **Ans:(B) Flywheel**

U.NO	Q NO	QUESTIONS
2	27	A hydraulic press works on which law? (a) Newton's law (b) Pascal's law (c) Boyle's law (d) Hooke's law **Ans:(B) Pascal's law**
2	28	Which type of press is preferred for heavy and slow operations like deep drawing? (a) Mechanical press (b) Hydraulic press (c) Screw press (d) Fly press **Ans:(B) Hydraulic press**
2	29	Which press type requires hydraulic oil and pumps for operation? (a) Mechanical press (b) Hydraulic press (c) Fly press (d) Screw press **Ans:(B) Hydraulic press**
2	30	Which press offers better control of pressure and stroke speed? (a) Mechanical press (b) Hydraulic press (c) Eccentric press (d) Power press **Ans:(B) Hydraulic press**
2	31	A factory needs to produce 1000 small washer blanks per hour. Which press should be selected? (a) Hydraulic press (b) Screw press (c) Mechanical press (d) Hand press **Ans:(C) Mechanical press**
2	32	A job requires deep drawing of large automotive panels. Which press is most suitable? (a) Mechanical press (b) Fly press (c) Toggle press (d) Hydraulic press **Ans:(D) Hydraulic press**
2	33	The main purpose of bending operation in press working is to: (a) Cut the metal sheet (b) Change the shape without removing material (c) Remove unwanted material (d) Join two sheets together **Ans:(B) Change the shape without removing material**
2	34	In bending, the metal is subjected to: (a) Compression only (b) Tension only (c) Both tension and compression (d) Shear only **Ans:(C) Both tension and compression**
2	35	Angle bending is performed to: (a) Produce holes (b) Cut out shapes (c) Form specific angles in sheet metal (d) Improve surface finish **Ans:(C) Form specific angles in sheet metal**

U.NO	Q NO	QUESTIONS
2	36	Chemical bending is mainly used for: (a) Soft materials like plastics or acrylic sheets (b) Hard steel plates (c) Cast iron parts (d) Aluminium forgings **Ans:(A) Soft materials like plastics or acrylic sheets**
2	37	Which bending process uses dies and punches? (a) Chemical bending (b) Angle bending (c) Spray bending (d) Flame bending **Ans:(B) Angle bending**
2	38	Which operation is non-mechanical among the following? (a) Angle bending (b) Chemical bending (c) Edge bending (d) V-bending **Ans:(B) Chemical bending**
2	39	Which bending method should be used to produce 100 plastic display panels? (a) Angle bending using press brake (b) Chemical bending (c) Mechanical V-bending (d) Coining **Ans:(B) Chemical bending**
2	40	What is the main tool used to bend a metal sheet at a specific angle (like 90°)? (a) Hammer and anvil (b) Rolling machine (c) Punch and die (d) Welding torch **Ans:(C) Punch and die**
2	41	Which method should be chosen to bend acrylic sheets for a display? (a) Mechanical V-bending (b) Coining (c) Press brake bending (d) Chemical bending **Ans:(D) Chemical bending**
2	42	The main purpose of curling in sheet metal work is to: (a) Increase the sheet thickness (b) Form a rounded edge for safety and strength (c) Cut the sheet into small pieces (d) Remove material from edges **Ans:(B) Form a rounded edge for safety and strength**
2	43	The purpose of drawing operation is to: (a) Cut sheet into pieces (b) Stretch sheet metal into a hollow shape (c) Bend the sheet at 90° (d) Roll sheet into strips **Ans:(B) Stretch sheet metal into a hollow shape**
2	44	Which type of force is mainly applied during deep drawing? (a) Tensile force (b) Compressive force (c) Shear force (d) Torsional force **Ans:(A) Tensile force**

U.NO	Q NO	QUESTIONS
2	45	Which shearing operation is used to cut out a flat piece from a sheet, leaving the scrap behind? (a) Piercing (b) Blanking (c) Trimming (d) Notching **Ans:(B) Blanking**
2	46	Lancing is commonly used to make: (a) Threaded holes (b) Weld joints (c) Vents, tabs, and louvers (d) Gears **Ans:(C) Vents, tabs, and louvers**
2	47	What bending angle is most commonly used for making enclosures, boxes, and brackets? (a) 30° (b) 45° (c) 60° (d) 90° **Ans:(D) 90°**
2	48	Which operation is performed to remove unwanted edges from a sheet metal component? (a) Blanking (b) Lancing (c) Notching (d) Trimming **Ans:(D) Trimming**
2	49	In which shearing operation is a hole produced in the sheet, leaving the punched material as scrap? (a) Blanking (b) Piercing (c) Trimming (d) Lancing **Ans:(B) Piercing**
2	50	Which operation is mainly used to remove a small portion from the edge of a sheet to allow bending or joining? (a) Blanking (b) Notching (c) Piercing (d) Lancing **Ans:(B) Notching**
2	51	Which heat treatment process produces a soft and ductile structure? (a) Hardening (b) Tempering (c) Annealing (d) Flame hardening **Ans:(C) Annealing**
2	52	Lancing is an operation in which the sheet is: (a) Completely separated into two parts (b) Cut and bent without removing the material completely (c) Heated and hardened (d) Drawn into a cup **Ans:(B) Cut and bent without removing the material completely**
2	53	The operation of producing a cylindrical or box-shaped component from a flat sheet blank is: (a) Drawing (b) Notching (c) Lancing (d) Piercing **Ans:(A) Drawing**

U.NO	Q NO	QUESTIONS
2	54	The iron-carbon equilibrium diagram shows the relationship between: (a) Pressure and volume (b) Temperature and composition (c) Time and pressure (d) Force and displacement **Ans:(B) Temperature and composition**
2	55	A hydraulic press operates using: (a) Compressed air (b) Hydraulic fluid pressure (c) Centrifugal force (d) Spring force **Ans:(B) Hydraulic fluid pressure**
3	1	Hot working is performed: (a) Above recrystallization temperature (b) Below recrystallization temperature (c) At room temperature (d) At cryogenic temperature **Ans:(A) Above recrystallization temperature**
3	2	Cold working is performed: (a) Above recrystallization temperature (b) Below recrystallization temperature (c) At melting temperature (d) At forging temperature **Ans:(B) Below recrystallization temperature**
3	3	What is an advantage of hot working? (a) Eliminates porosity and improves ductility (b) Improves surface finish (c) Requires low power (d) Produces no scale **Ans:(A) Eliminates porosity and improves ductility**
3	4	What is an Advantage of cold working? (a) Produces oxide scale (b) Good surface finish (c) Low power consumption (d) High temperature operation **Ans:(B) Good surface finish**
3	5	Drop forging uses: (a) Impact load (b) Hydraulic pressure (c) Rolling action (d) Centrifugal force **Ans:(A) Impact load**
3	6	Press forging uses: (a) Hammer impact (b) Gradual squeezing action (c) Rotary motion (d) Rolling dies **Ans:(B) Gradual squeezing action**
3	7	Upset forging increases: (a) Length (b) Cross-sectional area (c) Grain size (d) Hardness only **Ans:(B) Cross-sectional area**

U.NO	Q NO	QUESTIONS
3	8	Roll forging is performed on: (a) Hollow tubes (b) Round or flat stock (c) Sheet metal only (d) Powder compacts **Ans:(B) Round or flat stock**
3	9	Smith forging uses: (a) Hammer and anvil (b) Rolling mill (c) Lathe machine (d) Extrusion press **Ans:(A) Hammer and anvil**
3	10	Drop forging best suited for: (a) Mass production (b) Single piece (c) Sheet forming (d) Thin foils **Ans:(A) Mass production**
3	11	Press forging best suited for: (a) Large precision components (b) Thin sheets (c) Wire drawing (d) Tube making **Ans:(A) Large precision components**
3	12	Which component is usually produced by upset forging? (a) Bolt heads (b) Sheet bending (c) Wire drawing (d) Extrusion **Ans:(A) Bolt heads**
3	13	The main advantage of hot working over cold working is: (a) Better surface finish (b) Higher dimensional accuracy (c) No need for lubrication (d) No strain hardening **Ans:(D) No strain hardening**
3	14	Which hot working process reduces the thickness of the metal by passing it between rotating rolls? (a) Forging (b) Rolling (c) Extrusion (d) Drawing **Ans:(B) Rolling**
3	15	In smith forging, the force is applied: (a) Gradually by hydraulic press (b) Continuously by rolling (c) Intermittently by hammer blows (d) Suddenly by explosive force **Ans:(C) Intermittently by hammer blows**
3	16	Which of the following is NOT a characteristic of hot rolling? (a) Improved ductility (b) Better surface finish than cold rolling (c) Reduction in residual stresses (d) Continuous grain refinement **Ans:(B) Better surface finish than cold rolling**

U.NO	Q NO	QUESTIONS
3	17	The main reason why forging improves the mechanical properties of metals is: (a) It removes surface cracks (b) It aligns grain flow along the part geometry (c) It increases surface area (d) It increases the melting point **Ans:(B) It aligns grain flow along the part geometry**
3	18	What is the primary objective of smith forging? (a) Mass production of precise parts (b) Large reduction in cross-section (c) Shaping simple tools and components manually (d) Creating complex dies **Ans:(C) Shaping simple tools and components manually**
3	19	Which forging method should be selected to manufacture 10,000 identical bolts with enlarged heads ? (a) Drop forging (b) Upset forging (c) Press forging (d) Smith forging **Ans:(B) Upset forging**
3	20	Which one of the following forging processes is most suitable for large parts that require uniform internal structure? (a) Drop forging (b) Upset forging (c) Press forging (d) Open-die forging **Ans:(C) Press forging**
3	21	Which of the following metals is most commonly drop forged? (a) Lead (b) Plastic (c) Steel (d) Zinc **Ans:(C) Steel**
3	22	Which of the following components is most likely to be manufactured using roll forging? (a) Gear blanks (b) Long shafts with varying diameters (c) Small precision gears (d) Hollow pipes **Ans:(B) Long shafts with varying diameters**
3	23	Roll forging is a process in which the metal is: (a) Rolled between flat plates to reduce thickness (b) Compressed in a closed die using a hammer (c) Deformed between rotating grooved rolls (d) Drawn through a die to reduce diameter **Ans:(C) Deformed between rotating grooved rolls**
3	24	The main purpose of grooves in roll forging rolls is to: (a) Control friction (b) Reduce the rolling speed (c) Shape the workpiece as it passes through (d) Cool the workpiece faster **Ans:(C) Shape the workpiece as it passes through**
3	25	Cold working of metals usually decreases: (a) Yield strength (b) Surface roughness (c) Internal stresses (d) Elastic limit **Ans:(C) Internal stresses**

U.NO	Q NO	QUESTIONS
3	26	The main material removal mechanism in Ultrasonic Machining is: (a) Melting (b) Chemical reaction (c) Abrasive erosion (d) Electric discharge **Ans:(C) Abrasive erosion**
3	27	Which of the following materials is best suited for Ultrasonic Machining? (a) Mild steel (b) Copper (c) Glass (d) Aluminium **Ans:(C) Glass**
3	28	The abrasive slurry used in Ultrasonic Machining generally consists of: (a) Water and graphite (b) Oil and alumina (c) Water and silicon carbide (d) Kerosene and boron **Ans:(C) Water and silicon carbide**
3	29	Which one is an advantage of Ultrasonic Machining? (a) High tool wear (b) High thermal damage (c) No thermal damage (d) Low accuracy **Ans:(C) No thermal damage**
3	30	Chemical machining removes material through: (a) Melting (b) Chemical reaction (c) Electric discharge (d) Abrasive action **Ans:(B) Chemical reaction**
3	31	Chemical Machining is best suited for: (a) Thin sheets (b) Thick castings (c) Wood (d) Plastics **Ans:(A) Thin sheets**
3	32	Which is a disadvantage of Chemical Machining ? (a) No burrs (b) Undercutting (c) No heat zone (d) Suitable for all materials **Ans:(B) Undercutting**
3	33	Which step comes first in Chemical Machining ? (a) Etching (b) Cleaning (c) Masking (d) Stripping **Ans:(B) Cleaning**
3	34	In Electro Chemical Grinding, the tool acts as: (a) Cathode (b) Anode (c) Dielectric (d) Workpiece **Ans:(A) Cathode**

U.NO	Q NO	QUESTIONS
3	35	An advantage of Electro Chemical Grinding over grinding is: (a) High heat (b) Burr-free surface (c) High tool wear (d) Distortion **Ans:(B) Burr-free surface**
3	36	Which of the following is not required in Electro Chemical Grinding? (a) Electrical energy (b) Electrolyte (c) Abrasive wheel (d) Dielectric fluid **Ans:(D) Dielectric fluid**
3	37	In Electrical Discharge Machining, material removal is due to: (a) Chemical dissolution (b) Spark erosion (c) Abrasive action (d) Diffusion **Ans:(B) Spark erosion**
3	38	The dielectric fluid in Electrical Discharge Machining acts as: (a) Conductor (b) Insulator (c) Lubricant (d) Coolant **Ans:(B) Insulator**
3	39	Electrical Discharge Machining (EDM) is most suitable for machining: (a) Plastic (b) Wood (c) Hard steel (d) Rubber **Ans:(C) Hard steel**
3	40	Which one is a limitation of Electrical Discharge Machining? (a) Conductive materials only (b) Produces burrs (c) Needs no tool (d) Low heat **Ans:(A) Conductive materials only**
3	41	The tool in Electrical Discharge Machining is made of: (a) Copper (b) Steel (c) Aluminium (d) Wood **Ans:(A) Copper**
3	42	Plasma is: (a) Solid (b) Ionized gas (c) Liquid (d) Compound **Ans:(B) Ionized gas**
3	43	The temperature of plasma arc is approximately: (a) 500°C (b) 1500°C (c) 5000–25000°C (d) 100°C **Ans:(C) 5000–25000°C**

U.NO	Q NO	QUESTIONS
3	44	Which gas is used in Plasma Arc Machining? (a) Nitrogen or Argon (b) CO_2 (c) Kerosene (d) Steam **Ans:(A) Nitrogen or Argon**
3	45	Which is an application of Plasma Arc Machining? (a) Cutting thick metals (b) Polishing (c) Wood boring (d) Grinding **Ans:(A) Cutting thick metals**
3	46	A disadvantage of Plasma Arc Machining is: (a) High precision (b) High heat zone (c) Clean process (d) Low noise **Ans:(B) High heat zone**
3	47	The type of energy used in Laser Machining is: (a) Mechanical (b) Chemical (c) Thermal (from light) (d) Kinetic **Ans:(C) Thermal (from light)**
3	48	Which laser is commonly used for machining? (a) Ruby (b) Blue LED (c) IR Lamp (d) Halogen Lamp **Ans:(A) Ruby**
3	49	An application of Laser Machining is: (a) Drilling micro-holes (b) Milling (c) Turning (d) Sand blasting **Ans:(A) Drilling micro-holes**
3	50	A limitation of Laser Machining is: (a) High tool wear (b) High initial cost (c) Cannot make fine holes (d) Slow speed **Ans:(B) High initial cost**
3	51	In drop forging, the metal is shaped by: (a) Chemical action (b) Electrical sparks (c) Repeated hammer blows (d) Abrasive slurry only **Ans:(C) Repeated hammer blows**
3	52	Ultrasonic machining uses: (a) Chemical energy (b) High-frequency mechanical vibrations (c) Electrical sparks (d) Plasma **Ans:(B) High-frequency mechanical vibrations**

U.NO	Q NO	QUESTIONS
3	53	LASER stands for: (a) Light Amplification by Stimulated Emission of Radiation (b) Light Application by Simple Emission of Radiation (c) Low Amplification by Stimulated Energy Radiation (d) Light Amplification by Standard Emission Reaction **Ans:(A) Light Amplification by Stimulated Emission of Radiation**
3	54	Which process does not require physical contact between tool and workpiece? (a) Smith forging (b) Conventional turning (c) EDM (d) Press forging **Ans:(C) EDM**
3	55	Which process is best suited for machining very small holes in hard conductive materials? (a) EDM (b) Smith forging (c) Rolling (d) Chemical machining only **Ans:(A) EDM**
4	1	Plastics are mainly composed of: (a) Metals (b) Polymers (c) Ceramics (d) Alloys **Ans:(B) Polymers**
4	2	Thermoplastics can be: (a) Remelted and reshaped (b) Used only once (c) Burnt easily (d) Not recyclable **Ans:(A) Remelted and reshaped**
4	3	Thermosetting plastics become hard due to: (a) Cooling (b) Cross-linking of polymers (c) Addition of plasticizers (d) Freezing **Ans:(B) Cross-linking of polymers**
4	4	Which of the following is a thermosetting plastic? (a) Nylon (b) Epoxy resin (c) Polyethylene (d) PVC **Ans:(B) Epoxy resin**
4	5	Engineering plastics are known for their: (a) Low strength (b) High mechanical performance (c) High corrosion (d) Softness **Ans:(B) High mechanical performance**
4	6	An example of engineering plastic is: (a) Polystyrene (b) Polycarbonate (c) PVC (d) Bakelite **Ans:(B) Polycarbonate**

U.NO	Q NO	QUESTIONS
4	7	An advantage of using engineering plastics is: (a) Poor heat resistance (b) Corrosion resistance (c) Low strength (d) Brittleness **Ans:(B) Corrosion resistance**
4	8	Composite materials consist of: (a) Only one phase (b) Metal and ceramic (c) Matrix and reinforcement (d) Glass only **Ans:(C) Matrix and reinforcement**
4	9	Structural foam is mainly used for: (a) Electrical insulation (b) High density applications (c) Lightweight structures (d) Polishing **Ans:(C) Lightweight structures**
4	10	Elastomers are characterized by their: (a) Hardness (b) Elasticity (c) High melting point (d) Electrical conductivity **Ans:(B) Elasticity**
4	11	A common elastomer used in tyres is: (a) PVC (b) Polyurethane (c) Natural rubber (d) Acrylic **Ans:(C) Natural rubber**
4	12	Elastomers are used for: (a) Electrical circuits (b) Vibration dampers and seals (c) Cutting tools (d) Food packaging **Ans:(B) Vibration dampers and seals**
4	13	Thermosets differ from thermoplastics because they: (a) Can be remoulded (b) Soften on heating (c) Cannot be remoulded after curing (d) Melt easily **Ans:(C) Cannot be remoulded after curing**
4	14	Composite plastics are selected for: (a) High weight (b) Low stiffness (c) High strength-to-weight ratio (d) Poor fatigue life **Ans:(C) High strength-to-weight ratio**
4	15	Liquid crystal polymers exhibit: (a) Poor strength (b) Excellent dimensional stability (c) Softness (d) Low rigidity **Ans:(B) Excellent dimensional stability**

U.NO	Q NO	QUESTIONS
4	16	Polymer alloys are: (a) Mixtures of two or more polymers (b) Metallic compounds (c) Ceramic coatings (d) Rubber composites **Ans:(A) Mixtures of two or more polymers**
4	17	Which plastic has good impact resistance? (a) Polystyrene (b) Acrylic (c) Polycarbonate (d) Bakelite **Ans:(C) Polycarbonate**
4	18	Degradation of plastics occurs due to: (a) Temperature and UV exposure (b) Cold environment (c) Moisture absorption only (d) Painting **Ans:(A) Temperature and UV exposure**
4	19	Frictional property of plastic refers to: (a) Ease of colour mixing (b) Resistance to sliding (c) Elastic behaviours (d) Chemical reaction **Ans:(B) Resistance to sliding**
4	20	Wear resistance ensures: (a) Rapid damage (b) Transparency (c) Softness (d) Longer life of parts **Ans:(D) Longer life of parts**
4	21	Which property improves plastic's wear resistance? (a) Lubrication (b) Flexibility (c) High hardness (d) Transparency **Ans:(C) High hardness**
4	22	Special property of PTFE (Teflon) is: (a) Low friction and non-stick (b) High friction (c) Magnetism (d) Flexibility **Ans:(A) Low friction and non-stick**
4	23	Processing of thermoplastics involves: (a) Curing (b) Melting and moulding (c) Baking (d) Cross-linking **Ans:(B) Melting and moulding**
4	24	Thermosetting plastics are processed by: (a) Injection moulding (b) Blow moulding (c) Extrusion (d) Compression moulding **Ans:(D) Compression moulding**

U.NO	Q NO	QUESTIONS
4	25	Extrusion is mainly used to produce: (a) Hollow items (b) Flat sheets (c) Continuous profiles (d) Moulded parts **Ans:(C) Continuous profiles**
4	26	In single screw extrusion, material is conveyed by: (a) Air pressure (b) Screw rotation (c) Vacuum suction (d) Rollers **Ans:(B) Screw rotation**
4	27	The function of the hopper in extrusion is to: (a) Feed plastic granules (b) Cool the melt (c) Shape the product (d) Cut the material **Ans:(A) Feed plastic granules**
4	28	The barrel in an extruder is used to: (a) Store finished products (b) Measure temperature (c) Cool the product (d) Melt and transport the polymer **Ans:(D) Melt and transport the polymer**
4	29	Twin screw extruders are used when: (a) Single screw efficiency is enough (b) Product needs cooling (c) Better mixing is required (d) Less output is desired **Ans:(C) Better mixing is required**
4	30	Co-rotating twin screw extruders have screws rotating: (a) In opposite directions (b) Without rotation (c) In the same direction (d) Randomly **Ans:(C) In the same direction**
4	31	Counter-rotating twin screw extruders are used for: (a) High shear mixing (b) Pipe extrusion (c) Calendaring (d) Low friction moulding **Ans:(B) Pipe extrusion**
4	32	Defects in extrusion are reduced by controlling: (a) Mold design (b) Colorant (c) Temperature and pressure (d) Friction **Ans:(C) Temperature and pressure**
4	33	Twin screw extruders have better: (a) Colour quality (b) Cooling rate (c) Electrical properties (d) Mixing and degassing **Ans:(D) Mixing and degassing**

U.NO	Q NO	QUESTIONS
4	34	In injection moulding, ejection system removes: (a) Finished product (b) Molten plastic (c) Air bubbles (d) Feed material **Ans:(A) Finished product**
4	35	Injection moulding is best suited for producing: (a) Complex parts (b) Continuous products (c) Sheets (d) Films **Ans:(A) Complex parts**
4	36	Plunger type injection moulding is suitable for: (a) Thermoplastics (b) Thermosets (c) Metals (d) Composites **Ans:(B) Thermosets**
4	37	In plunger type injection moulding, plasticization occurs: (a) In screw (b) In a separate cylinder (c) In nozzle (d) In hopper **Ans:(B) In a separate cylinder**
4	38	Reciprocating screw injection moulding combines: (a) Mixing and cooling (b) Cooling and feeding (c) Cutting and feeding (d) Plasticizing and injection **Ans:(D) Plasticizing and injection**
4	39	The mould in injection moulding defines: (a) The colour (b) The feed rate (c) The shape of product (d) The melting temperature **Ans:(C) The shape of product**
4	40	Clamping unit in injection moulding is used to: (a) Hold the mould closed (b) Feed material (c) Cool the mould (d) Eject the part **Ans:(A) Hold the mould closed**
4	41	Gas used in gas-assisted moulding is usually: (a) Oxygen (b) Helium (c) Nitrogen (d) Carbon dioxide **Ans:(C) Nitrogen**
4	42	In sandwich moulding, the core material is: (a) Discarded (b) Air (c) Same as outer layers (d) Different from skin layers **Ans:(D) Different from skin layers**

U.NO	Q NO	QUESTIONS
4	43	Gas injection moulding reduces: (a) Weight and sink marks (b) Strength (c) Melt flow (d) Cycle time only **Ans:(A) Weight and sink marks**
4	44	Injection moulding of thermosets differs as it requires: (a) Cooling (b) Curing with heat (c) Rapid cooling (d) High-speed injection **Ans:(B) Curing with heat**
4	45	The nozzle in injection moulding connects: (a) Hopper and screw (b) Barrel and hopper (c) Clamp and heater (d) Screw and mould **Ans:(D) Screw and mould**
4	46	Calendaring is used to produce: (a) Hollow pipes (b) Moulded parts (c) Thin sheets and films (d) Foamed products **Ans:(C) Thin sheets and films**
4	47	In calendaring, the plastic is shaped by: (a) Air pressure (b) Rolling (c) Injection (d) Curing **Ans:(B) Rolling**
4	48	Rotational moulding is ideal for producing: (a) Hollow seamless products (b) Small solid items (c) Films (d) Sheets **Ans:(A) Hollow seamless products**
4	49	In rotational moulding, polymer is heated while: (a) Being stationary (b) Injected (c) Compressed (d) Rotating **Ans:(D) Rotating**
4	50	Cooling stage in extrusion helps in: (a) Improving colour (b) Maintaining shape (c) Increasing melt flow (d) Feeding granules **Ans:(B) Maintaining shape**
4	51	Structural foam plastics have: (a) Cellular structure (b) Metallic structure (c) Crystalline metal structure (d) No internal structure **Ans:(A) Cellular structure**

U.NO	Q NO	QUESTIONS
4	52	LCP stands for: (a) Liquid Crystal Polymer (b) Low Carbon Polymer (c) Linear Crystal Plastic (d) Liquid Carbon Plastic **Ans:(A) Liquid Crystal Polymer**
4	53	The ability of a plastic to withstand applied forces is related to its: (a) Mechanical properties (b) Colour (c) Transparency only (d) Density only **Ans:(A) Mechanical properties**
4	54	Sandwich moulding produces: (a) Multi-layered plastic components (b) Metal sheets (c) Ceramic parts (d) Forged shafts **Ans:(A) Multi-layered plastic components**
4	55	Gas injection moulding uses: (a) Gas pressure (b) Water pressure only (c) Hammer pressure (d) Chemical pressure **Ans:(A) Gas pressure)**
5	1	What is orthogonal cutting? (a) Cutting at an angle (b) Cutting with two tools (c) Cutting with 90° tool face (d) Cutting with coolant **Ans:(C) Cutting with 90° tool face**
5	2	Oblique cutting differs from orthogonal cutting by: (a) Tool angle (b) Tool material (c) Chip type (d) Cutting fluid used **Ans:(A) Tool angle**
5	3	A single point cutting tool is used in: (a) Milling (b) Turning (c) Drilling (d) Grinding **Ans:(B) Turning**
5	4	The rake angle in a cutting tool affects: (a) Tool wear (b) Chip flow (c) Coolant flow (d) Tool hardness **Ans:(B) Chip flow**
5	5	The flank face of a cutting tool is: (a) Top surface (b) Side surface (c) Bottom surface (d) Cutting edge **Ans:(C) Bottom surface**

U.NO	Q NO	QUESTIONS
5	6	Tool geometry affects: (a) Machine speed (b) Chip formation (c) Coolant flow (d) Tool colour **Ans:(B) Chip formation**
5	7	Orthogonal cutting is used for: (a) Complex shapes (b) Simple analysis (c) High-speed machining (d) Soft materials **Ans:(B) Simple analysis**
5	8	Which chip type is common in ductile materials? (a) Discontinuous (b) Continuous (c) Serrated (d) Powdered **Ans:(B) Continuous**
5	9	Chip breakers are used to: (a) Harden the tool (b) Cool the tool (c) Break long chips (d) Increase tool life **Ans:(C) Break long chips**
5	10	Which material is commonly used for cutting tools? (a) Copper (b) High-speed steel (c) Aluminum (d) Lead **Ans:(B) High-speed steel**
5	11	Tool wear occurs due to: (a) Excess lubrication (b) Low temperature (c) Friction and heat (d) Chip formation **Ans:(C) Friction and heat**
5	12	Which tool material is hardest? (a) HSS (b) Carbide (c) Diamond (d) Ceramic **Ans:(C) Diamond**
5	13	Built-up edge occurs due to: (a) High temperature (b) Low feed rate (c) Tool vibration (d) Chip adhesion **Ans:(D) Chip adhesion**
5	14	Crater wear occurs on: (a) Flank face (b) Rake face (c) Cutting edge (d) Tool holder **Ans:(B) Rake face**

U.NO	Q NO	QUESTIONS
5	15	Which chip type is undesirable? (a) Continuous (b) Discontinuous (c) Serrated (d) Long continuous **Ans:(D) Long continuous**
5	16	Which tool material is best for high-speed cutting? (a) HSS (b) Carbide (c) Bronze (d) Mild steel **Ans:(B) Carbide**
5	17	Tool wear can be minimized by: (a) Increasing speed (b) Using proper coolant (c) Ignoring chip flow (d) Using soft tools **Ans:(B) Using proper coolant**
5	18	Which factor affects tool life most? (a) Tool color (b) Cutting speed (c) Coolant color (d) Chip shape **Ans:(B) Cutting speed**
5	19	Tool life increases with: (a) Higher speed (b) Lower feed rate (c) No coolant (d) Poor tool geometry **Ans:(B) Lower feed rate**
5	20	Which factor does NOT affect tool life? (a) Cutting speed (b) Feed rate (c) Tool colour (d) Depth of cut **Ans:(C) Tool colour**
5	21	Which cutting fluid is used for aluminium? (a) Water (b) Kerosene (c) Sulphur oil (d) Dry air **Ans:(B) Kerosene**
5	22	Which fluid property helps in chip removal? (a) Lubricity (b) Viscosity (c) Density (d) Conductivity **Ans:(A) Lubricity**
5	23	Cutting fluid reduces: (a) Tool strength (b) Tool wear (c) Tool cost (d) Tool size **Ans:(B) Tool wear**

U.NO	Q NO	QUESTIONS
5	24	Cutting fluids are used to: (a) Increase friction (b) Reduce heat and wear (c) Harden the tool (d) Break chips **Ans:(B) Reduce heat and wear**
5	25	Which property is essential for cutting fluid? (a) High viscosity (b) High conductivity (c) Low boiling point (d) High flammability **Ans:(B) High conductivity**
5	26	The first step in powder metallurgy is: (a) Powder production (b) Compacting (c) Sintering (d) Finishing **Ans:(A) Powder production**
5	27	Atomization produces powder by: (a) Grinding (b) Spraying molten metal (c) Electrolysis (d) Rolling **Ans:(B) Spraying molten metal**
5	28	Atomization is a: (a) Thermal process (b) Mechanical process (c) Chemical process (d) Electrochemical process **Ans:(A) Thermal process**
5	29	Reduction method involves: (a) Heating metal oxides (b) Cooling molten metal (c) Electroplating (d) Rolling sheets **Ans:(A) Heating metal oxides**
5	30	Reduction method uses: (a) Electrolytes (b) Inert gas (c) Reducing agents (d) Water **Ans:(C) Reducing agents**
5	31	Reduction method is suitable for: (a) Oxide powders (b) Plastic powders (c) Ceramic powders (d) Liquid metals **Ans:(A) Oxide powders**
5	32	Electrolysis deposition produces powder by: (a) Spraying metal (b) Melting metal (c) Electrochemical reaction (d) Grinding metal **Ans:(C) Electrochemical reaction**

U.NO	Q NO	QUESTIONS
5	33	Electrolysis is ideal for: (a) Alloy powders (b) Pure metal powders (c) Ceramic powders (d) Plastic powders **Ans:(B) Pure metal powders**
5	34	Electrolysis deposition is: (a) Mechanical (b) Thermal (c) Chemical (d) Electrochemical **Ans:(D) Electrochemical**
5	35	Compacting in powder metallurgy means: (a) Heating powder (b) Mixing powder (c) Pressing powder (d) Cooling powder **Ans:(C) Pressing powder**
5	36	Compacting pressure affects: (a) Colour (b) Density (c) Shape (d) Temperature **Ans:(B) Density**
5	37	Compacting is done using: (a) Rollers (b) Mixers (c) Heaters (d) Presses **Ans:(D) Presses**
5	38	Sintering is done to: (a) Harden the tool (b) Remove moisture (c) Bond powder particles (d) Increase porosity **Ans:(C) Bond powder particles**
5	39	Sintering temperature is: (a) Above melting point (b) Below melting point (c) Equal to melting point (d) Room temperature **Ans:(B) Below melting point**
5	40	Sintering improves: (a) Density (b) Porosity (c) Colour (d) Brittleness **Ans:(A) Density**
5	41	Sizing improves: (a) Strength (b) Porosity (c) Surface finish (d) Hardness **Ans:(C) Surface finish**

U.NO	Q NO	QUESTIONS
5	42	Sizing is done: (a) Before sintering (b) After sintering (c) During compacting (d) During mixing **Ans:(B) After sintering**
5	43	Sizing ensures: (a) Porosity (b) Brittleness (c) Colour (d) Dimensional accuracy **Ans:(D) Dimensional accuracy**
5	44	Infiltration adds: (a) Heat (b) Lubricant (c) Metal to pores (d) Air to powder **Ans:(C) Metal to pores**
5	45	Infiltration improves: (a) Porosity (b) Surface roughness (c) Strength (d) Brittleness **Ans:(C) Strength**
5	46	Infiltration is used to: (a) Increase porosity (b) Fill pores with metal (c) Reduce strength (d) Add colour **Ans:(B) Fill pores with metal**
5	47	Mechanical property of powder metallurgy parts includes: (a) High ductility (b) Controlled porosity (c) Low strength (d) High corrosion **Ans:(B) Controlled porosity**
5	48	Powder metallurgy parts are ideal for: (a) Complex small parts (b) Large castings (c) Transparent items (d) Soft rubber items **Ans:(A) Complex small parts**
5	49	Design rule for powder metallurgy includes: (a) Sharp corners (b) Uniform wall thickness (c) Deep holes (d) Thin edges **Ans:(B) Uniform wall thickness**
5	50	Design for powder metallurgy avoids: (a) Uniform shapes (b) Thin walls (c) Sharp edges (d) Flat surfaces **Ans:(C) Sharp edges**

U.NO	Q NO	QUESTIONS
5	51	Metal cutting is a process of removing: (a) Material in the form of chips (b) Material by melting only (c) Material by chemical reaction (d) Material by forging **Ans:(A) Material in the form of chips**
5	52	In oblique cutting, the cutting edge is: (a) Perpendicular to cutting velocity (b) Inclined to the cutting velocity (c) Always parallel to the workpiece (d) Vertical only **Ans:(B) Inclined to the cutting velocity**
5	53	The clearance angle is provided to: (a) Increase friction (b) Prevent rubbing between tool and workpiece (c) Increase tool weight (d) Produce chips **Ans:(B) Prevent rubbing between tool and workpiece**
5	54	The angle between the rake face and reference plane is called: (a) Clearance angle (b) Rake angle (c) Cutting angle (d) Helix angle **Ans:(B) Rake angle**
5	55	Powder metallurgy is particularly suitable for: (a) Self-lubricating bearings (b) Large welded structures only (c) Forged plates only (d) Wooden components **Ans:(A) Self-lubricating bearings**

UNIT	PART	Q.NO	QUESTION
1	B	1	Mention the advantages of moulding machines over manual moulding
1	B	2	Differentiate between jolt and squeeze moulding machines
1	B	3	Explain briefly about refractoriness and permeability properties of core sand
1	B	4	What is a cupola furnace used for? State any three advantages of a cupola furnace
1	B	5	Write short notes on steps involved in CO_2 process of core making
1	B	6	Differentiate between hot and cold chamber casting
1	B	7	Compare gravity die casting and pressure die casting
1	B	8	Mention the advantages and disadvantages of continuous casting process
1	B	9	Write short notes on blowhole in casting with its causes and remedies
1	B	10	Mention any one casting defect with its causes and remedies
1	B	11	What is investment casting? Mention its principle.
2	B	1	What is heat treatment? State any three purposes of heat treatment
2	B	2	What is iron-carbon equilibrium diagram? Write its importance in heat treatment?
2	B	3	Explain briefly about annealing
2	B	4	Mention the needs of case hardening
2	B	5	Differentiate between hardening and tempering
2	B	6	Compare mechanical press and hydraulic press
2	B	7	Differentiate blanking and piercing operations
2	B	8	What are the purposes of annealing process?
2	B	9	Explain briefly about any two shearing operations in press working
2	B	10	Explain briefly about any two forming operations in press working
2	B	11	List the commonly used quenching media.
3	B	1	Differentiate between hot working and cold working
3	B	2	Compare drop forging and press forging
3	B	3	Explain briefly about upset forging and write its advantages
3	B	4	Write short notes on rolling in hot working
3	B	5	Write short notes on smith forging
3	B	6	What is ultrasonic machining? Write its advantages
3	B	7	Write short notes plasma arc machining
3	B	8	Compare chemical machining and electro chemical grinding
3	B	9	What is laser machining? Write its limitations
3	B	10	Write advantages and disadvantages of chemical machining
3	B	11	Define forging and mention any two applications.
4	B	1	Differentiate between thermoplastics and thermosetting plastics
4	B	2	Explain briefly about special properties of plastics considered during selection
4	B	3	Write short notes on sandwich moulding process
4	B	4	What are composite plastics? Write the need for composite plastics
4	B	5	Explain briefly about liquid crystal polymers
4	B	6	Differentiate between single screw extruder and twin-screw extruder
4	B	7	Differentiate between plunger type injection moulding and reciprocating screw injection moulding

UNIT	PART	Q.NO	QUESTION
4	B	8	Explain briefly about the calendaring process
4	B	9	Compare extrusion and injection moulding
4	B	10	Write short notes on gas injection moulding
4	B	11	Define elastomers and give two examples.
5	B	1	Differentiate between orthogonal cutting and oblique cutting
5	B	2	List out the parts of single point cutting tool
5	B	3	Explain briefly about the factors affecting tool life
5	B	4	Compare continuous chip and discontinuous chip
5	B	5	Mention the functions of cutting fluids
5	B	6	Write short notes on steps involved in powder metallurgy process
5	B	7	Write short notes on compacting
5	B	8	Explain briefly about atomization process of metal powder manufacturing and write its advantages
5	B	9	Explain briefly about design rules for the powder metallurgy process
5	B	10	Write short notes on sintering
5	B	11	List the important angles in single-point cutting tool nomenclature.
1	C	1	Explain the working principle of a jolting machine with a neat sketch.
1	C	2	Discuss the CO_2 core-making process with a suitable diagram.
1	C	3	Explain the working principle of a cupola furnace with a neat sketch.
1	C	4	Describe the centrifugal casting process with a neat diagram.
1	C	5	Explain various casting defects along with their causes and remedies.
1	C	6	Explain the working principle of a sand slinger with a neat sketch.
2	C	1	Explain the Iron–Carbon equilibrium diagram in detail with a neat sketch.
2	C	2	Explain flame hardening with a suitable sketch.
2	C	3	Discuss the construction and working of a mechanical press with a suitable diagram.
2	C	4	Describe various bending operations with neat sketches.
2	C	5	Describe various shearing operations with neat sketches.
2	C	6	Explain the drawing operation in sheet metal working.
3	C	1	Compare hot working and cold working in detail and list their advantages.
3	C	2	Explain the roll forging operation with a suitable diagram.
3	C	3	Discuss the working of ultrasonic machining with a neat sketch.
3	C	4	Describe the construction and working of electrical discharge machining (EDM) with a neat sketch and list its advantages.
3	C	5	Discuss the construction and working of laser beam machining (LBM) with a neat sketch.
3	C	6	What is a maskant? What is its purpose in chemical machining?

UNIT	PART	Q.NO	QUESTION
4	C	1	Discuss various types of plastics in detail.
4	C	2	Explain the mechanical properties and special properties of plastics.
4	C	3	Explain in detail the single-screw extrusion process with a suitable sketch.
4	C	4	Explain in detail the sandwich moulding process with a suitable sketch.
4	C	5	Explain the calendering and rotational moulding processes with suitable diagrams.
4	C	6	What are frictional properties? Why are they important?
5	C	1	Explain the types of chips and chip breakers in detail.
5	C	2	Explain the design rules for powder metallurgy and the mechanical properties of powder metallurgy parts.
5	C	3	Discuss the atomization process for making metal powder with a neat sketch.
5	C	4	Explain the electrolytic deposition process in detail with a neat diagram.
5	C	5	Explain the sintering process in detail with a neat diagram.
5	C	6	Differentiate atomization method and reduction method of producing metal powders.