



## QUESTION BANK

Name of the Department : Mechanical Engineering  
Subject Code & Name : ME 8351 & Manufacturing Technology-1  
Year & Semester : II & III

### Unit-I Metal casting processes

#### PART A

#### 1. State any four types of patterns.

The various types of patterns which are commonly used are as follows:

- 1) Single piece or solid pattern
- 2) Two piece or split pattern
- 3) Loose piece pattern
- 4) Cope and drag pattern
- 5) Gated pattern

#### 2. Mention any two advantages and disadvantages of die casting.

##### Advantages:

- It is a very fast process.
- Moulds have longer life.
- Better surface can be obtained.

##### Limitations:

- Moulds are much costlier.
- This method is not suitable for small quantity production.
- Shape and weight of the casting is limited.

#### 3. Write the requirements of good pattern.

- Simple in design
- Cheap and readily available
- Light in mass
- Surface is smooth
- Have high strength

#### 4. What is core venting ?



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While pouring the mould with molten metal mould walls and cores heat up rapidly and releases large amount of gases. In order to prevent casting defects these gases must be vented out. For this purpose core venting are used. Core venting is incorporated in the core box itself.

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### What function of core?

- Core provides a means of forming the main internal cavity for hollow casting.
- Core provides external undercut feature
- Cores can be inserted to obtain deep recesses in the casting.
- Cores can be used to increase the strength of the mould

### 6. Which process is called lost waxing method? Why?

Investment casting process is also known as Lost-wax process. The term investment refers to a clock or special covering apparel. In investment casting, the clock is a refractory mould which surrounds the precoated wax pattern.

### 7. What is the function of core prints?

- Core prints are basically extra projections provided on the pattern
- They form core seats in the mould when pattern is embedded in the sand for mould making.
- Core seats are provided to support all the types of cores
- Though the core prints are the part of pattern, they do not appear on the cast part

### 8. What are the advantages and applications of ceramic Moulds?

#### Advantages:

- It is less expensive
- Intricate objects can be casted.
- Castings of thin sections and which do not require machining can be produced.

#### Applications:

- It is mainly used for all material using better ingredient in slurry.

### 9. What are the pattern materials?

- Wood
- Metal
- Plastic
- Plaster
- Wax

### 10. Explain the term fettling.



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Fettling is the name given to cover all those operations which help the casting to give a good appearance. It includes the removal of cores, sand, gates, risers, runners and other unwanted projections from the casting.

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### 11. Why is a taper allowance used?

Draft allowance or taper allowance is given to all vertical faces of a pattern for their easy removal from sand without damaging the mould.

### 12. When does warpage occur?

Warpage occurs when,

- (1) It is of irregular shape.
- (2) It is of U or V-shape
- (3) The arms having unequal thickness.
- (4) One portion of the casting cools at a faster rate than the other.

### 13. How do you eliminate warpage ?

To eliminate this defect, an opposite distortion is provided on the pattern, so that the effect is balanced and correct shape of the casting is produced.

### 14. Enlist the factors affecting selection of types of pattern.

The type of pattern to be used for a particular casting will depend on following factors :

- (1) Quantity of casting to be produced
- (2) Size and shape of the casting
- (3) Type of moulding method
- (4) Design of casting

### 15. Name any four types of pattern.

➤ The various types of patterns which are commonly used are as follows

- (1) Single piece or solid pattern
- (2) Two piece or split pattern
- (3) Loose piece pattern
- (4) Cope and drag pattern
- (5) Gated pattern

### 16. Write the significance of loose moulding.

Some patterns embedded in the moulding sand cannot be withdrawn, hence such patterns are made with one or more loose pieces for their easy removal from the moulding box.



## 17. Name and give use of the pattern in which number of casting are made at a time.

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By using gated patterns number of casting can be made at a time, hence they are used in mass production system.

## 18. What is the difference between sweep and segmental pattern?

The main difference between them is that, a sweep is given a continuous revolving motion to generate the required shape, whereas a segmental pattern is a portion of the solid pattern itself and the mould is prepared in parts by it.

## 19. Why are patterns coloured ?

Patterns are provided with certain colors and shade for following reasons:

- (i) To identify quickly the main pattern body and different pattern parts.
- (ii) To indicate the type of the metal to be cast.
- (iii) To identify loose pieces, core prints, etc.
- (iv) To visualize machined surfaces, etc.

## 20. What are the types of moulding sand?

All types of sands used in the foundry can be grouped as:

- i) Natural sand
- ii) Synthetic sand
- iii) Special sands

### PART B

#### PART – B

1.
  - i. Discuss the properties of moulding sand
  - ii. What are the various moulding methods, explain them
2.
  - i. Explain the working principle of investment casting
  - ii. Discuss the casting defects and their inspection methods
3.
  - i. What are the pattern making allowances and briefly explain them
  - ii. Describe centrifugal casting process
4.
  - i. Describe the shell moulding process
  - ii. Explain the ceramic moulding process and state its merits and demerits



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5.
  - i. What are the factors which govern the selection of proper material for pattern making?
  - ii. What are the specific advantages of match plate patterns? Explain how they are used for making mould
6.
  - i. Classify the types of patterns and sketch any three of them
  - ii. What is core and explain how to make a core?
7.
  - i. Explain the construction and operation of Cupola furnace with diagram
  - ii. Write a short note on "Chills"
8.
  - i. Describe various materials used for making patterns. What are its merits and demerits?
  - ii. What are the basic requirements of core sand? How does it differ from the moulding sand?
9.
  - i. What are the different types of furnace used in foundry? Describe in detail with neat sketches any one of them
  - ii. Describe the steps involved in the preparation of green sand mould with cope and drag pattern
10.
  - i. Briefly explain cold-chamber die casting process with a neat sketch
  - ii. What are the advantages of centrifugal casting?

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## UNIT II – Joining processes

### PART A

#### **1. Define weldability.**

Weldability is defined as the capacity of a material to be welded under fabrication conditions imposed in a specific and suitably designed structure and to perform satisfactorily in the intended service.

#### **2. State requirement of a good weldability.**

- Have full strength and toughness after welding.
- Contribute to good weld quality even with high dilution.
- Have unchanged corrosion resistance after welding.
- Should not embrittle after stress relieving.

#### **3. How is welding classified?**



Welding is classified as,

- Gas welding
- Arc welding
- Resistance welding
- Solid state welding
- Thermo-chemical welding processes
- Radiant energy welding processes

#### **4. Name the applications of welding.**

Applications of welding are,

- Aircraft
- construction
- Automobile construction
- Buildings
- Pressure vessels and tanks
- Rail road equipment
- Piping's and pipelines

#### **5. Write in short about gas welding.**

Gas welding is a fusion-welding or non-pressure welding method. It joins the metals, by using combustion heat of oxygen/air and fuel gas (acetylene, hydrogen, propane or butane) mixture.

#### **6. Name the types of gas welding.**

Following are the types of gas welding.

- (a) Oxy-acetylene welding
- (b) Air-acetylene welding
- (c) Oxy-hydrogen welding
- (d) Pressure gas welding

#### **7. Explain the principle of oxy-acetylene welding.**

When acetylene, in correct proportion, is mixed with oxygen in a welding torch and ignited, then the flame resulting at the tip of the torch is sufficiently hot to melt and join the parent metals.

#### **8. Name the types of flames.**

- (a). Neutral flame (Acetylene and oxygen in equal proportion)
- (b). Oxidising flame (Excess of oxygen)
- (c). Reducing flame or carburising flame (Excess of acetylene)



## 9. Explain neutral flame.

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The flame has a nicely defined inner cone which is light blue in colour and surrounded by an outer flame envelope.

## 10. What are the metals welded using neutral flame?

- Mild steel
- Cast iron
- Aluminium
- Stainless steel
- Copper

## How do we obtain oxidizing flame using neutral flame ?

If, after the neutral flame has been established, the oxygen supply is further increased then oxidizing flame will be developed.

## 12. How does the flame of an oxidizing flame look?

It is recognized by the small white cone which is shorter, much bluer in colour and more pointed than neutral flame.

## 13. Where is oxidizing flame used?

- Copper-base metals
- Zinc-base metals
- Ferrous metals such as manganese steel, cast iron, etc.

## 14. Define carburizing flame.

If the amount of oxygen supplied to the neutral flame is reduced, then the generated flame will be a carburising flame or reducing flame i.e more content of acetylene.

## 15. Name the metals welded by carburising flame.

- Welding of low alloy steel rods
- Non-ferrous metals
- High carbon steel

## 16. Write down the methods of welding.

- (a) Leftward or fore-hand welding method
- (b) Rightward or back-hand welding method
- (c) Vertical welding method

## 17. Explain the function of flux in welding.



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While welding, if the metal is heated in air then the oxygen from air combines with the metal to form oxides. This results in poor quality, low weld strength hence, to avoid this difficulty a flux is employed during welding. It prevents the oxidation of molten metal.

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### 18. What are the disadvantages of flux?

Fluxes used in welding produces fumes that are irritating to the eyes, nose, throat and lungs.

### 19. Give the applications of gas welding.

- Joining thin materials.
- Joining most ferrous and non-ferrous metals.
- In automobile and aircraft industries.
- In sheet metal fabricating plant.

### 20. What is arc welding?

Electric arc welding is a fusion welding process in which welding heat is obtained from an electric arc between an electrode and the workpiece.

### 21. Define arc length and arc crater.

The distance between the center of arc of the electrode tip and the bottom of arc crater is called as arc length. A small depression is formed in the base of the metal which is called as arc crater.

### 22. Name the equipment of gas welding

- A.C or D.C machine
- Wire brush
- Cables and connector
- Earthing clamps
- Chipping hammer
- Wire brush
- Helmet
- Safety goggles
- Cable lug
- Hand gloves, apron, etc.

### 26. Define SMAW.

It is an arc welding process where coalescence is produced by heating the workpiece with an electric arc set up between the flux coated electrode and the workpiece.



1.
  - i. Distinguish between gas and arc welding
  - ii. What are the advantages of welding?
  - iii. Explain percussion welding
  
2.
  - i. Describe Electro slag welding
  - ii. Distinguish between soldering and brazing
  
3.
  - i. Explain spot welding
  - ii. Explain submerged arc welding
  
4.
  - i. Explain the electron beam welding process with a neat sketch
  - ii. Write a brief note on “Welding defects”
  
5.
  - i. Sketch the three types of Oxy-acetylene flames and state their characteristics and applications.
  - ii. Describe the electro-slag welding process with a neat sketch.
  
6.
  - i. What is the principle of resistance welding and explain the seam welding?
  - ii. Describe plasma arc welding
  
7.
  - i. What are the different types of electrode? What are the functions of flux coating?
  - ii. What is the principle of friction welding?
  
8.
  - i. Describe metal inert Gas arc welding process with a neat sketch.
  - ii. Briefly explain on butt welding process
  
9.
  - i. Give a brief account of classification of welding processes?
  - ii. Explain TIG welding process variables and enumerate its advantages
  
10.
  - i. Describe shielded metal arc welding process with suitable diagram. What are its applications?
  - ii. What is the difference between welding, brazing and soldering process?



## UNIT 3 – Metal Forming Processes

### PART A

#### **What is mechanical working ?**

Mechanical working for a metal is a simply plastic deformation performed to change the dimensions, properties and surface conditions with the help of mechanical pressure.

#### **2. Define cold and hot working in short.**

Mechanical working of metals above the recrystallization temperature, but below the melting or burning point is known as hot working whereas; below the recrystallization temperature is known as cold working.

#### **3. Give the principal hot working process.**

- Hot rolling
- Hot extrusion
- Hot spinning
- Roll piercing
- Hot drawing
- Hot forging

#### **4. What is the purpose of rolling ?**

The main purpose of rolling is to convert larger sections such as ingots into smaller sections, which can be used directly in as rolled state or stock for working through other process.

#### **5. Name the commonly used rolled sections.**

Commonly rolled sections are flat, tee, angle, channel, round, I-section.

#### **6. What are the types of rolling mills?**

- a) Two-high rolling mill
- b) Three-high rolling mill
- c) Four-high rolling mill
- d) Tandem rolling mill
- e) Cluster rolling mill
- f) Planetary rolling mill

#### **Explain cluster rolling mill.**



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It is a special type of fourhigh rolling mill. In this, each of the two working rolls is backed up by two or more of the larger back up rolls.

### 8. What is tandem rolling mill ?

It is a set of two or three stands of rolls set in parallel alignment. This facilitates a continuous pass through each one successively without change of direction of the metal or pause in the rolling process.

### 9. What is the main function of planetary rolling mill?

The main feature of this mill is that, it reduces a hot slab to a coiled strip in a single pass.

### 10. Which mill is attached to end of planetary mill and what is its function?

On the exit side planetary mill is installed to improve the surface finish.

### 11. Define extrusion.

The extrusion process consists of compressing a metal inside a chamber to force it out through a small opening which is called as die.

### 12. Name the method of extrusion.

The different methods of extrusion are hot extrusion and cold extrusion.

### 13. What are the factors affecting choice of extrusion?

- a) Metal to be extruded
- b) Thickness of the extrusion section
- c) Raw material size
- d) Capacity of the press
- e) Product typ, etc.

### 14. How is hot extrusion sub-divided?

- (a) Direct or forward extrusion
- (b) Indirect or backward extrusion
- (c) Tube extrusion

### What is discard?

Generally, last 10% length of billet is extruded which is known as discard (waste) and it contains the surface impurities of the billet.

### 16. Give the other name of indirect and direct extrusion.

- (i) Direct extrusion is also called as forward extrusion.
- (ii) Indirect extrusion ia also called as backward extrusion.



## 17. Which extrusion requires less force and define it.

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As compared to direct extrusion, less total force is required in indirect extrusion. In this type, the ram or plunger used is hollow and as it presses the billet against the back wall of the closed chamber, the metal is extruded back into the plunger.

## 18. What is forging?

Forging is the process of shaping heated metal by the application of sudden blows (hammer forging) or steady pressure (press forging) and makes use of the characteristic of plasticity of the material.

## 19. How is forging classified?

According to the equipment utilized for forging, they are classified as follows:

### 1. Smith dies (Open die) forging:

- (a) Hand forging
- (b) Power forging

### 2. Impression die (Closed die) forging:

- (a) Drop forging
- (b) Press forging
- (c) marching or upset forging
- (d) Roll forging

## 20. Define smithing.

Smithing is the act or art of working on forging metals, as iron, into any required shape.

## **PART B**

1. Classify the types of forging machines and explain any one
2. Explain the forward and back extrusion process
3.
  - i. Classify the types of rolling mills and sketch them
  - ii. List out various forging defects
4.
  - i. Describe hydrostatic extrusion process.
  - ii. Compare press forging and hammer forging



5.
  - i. Explain the tube piercing process
  - ii. Distinguish hot and cold extrusion process and briefly explain one in each.
6.
  - i. Describe the principle of rolling. Write the various kinds of rolling mills along with their applications
  - ii. What are the types of power hammers available and explain the pneumatic hammer with a neat sketch
7.
  - i. Describe the difference between a bloom, a slab and a billet. Explain the features of different types of rolling process.
  - ii. Discuss the effects of temperature, strain rate and friction on metal forming process
8.
  - i. Explain with a sketch, what is meant by flat strip rolling.
  - ii. Explain the procedure for making the head of Bolt by forging operation
9.
  - i. Name the hand forging operation and explain briefly about them.
  - ii. Explain with a neat sketch of roll forging process.
10. Describe the following processes
  - a). Roll die forging
  - b). Skew rolling
  - c). Ring rolling

## Unit 4 – Sheet Metal Processes

### PART A

#### **Name the different sheet metals**

- Black iron
- Galvanized iron
- Aluminum Sheets
- Copper Sheets:
- Stainless steel
- Tin plates

#### **2. Name the different hand tools used in sheets metals.**

- Hammers
- Mallet
- Swages
- Tongs
- Punches and shears



- Stakes
- Tri square and scribes
- Wing compass

### 3. Name the commonly used tools.

- Steel square
- Bumping hammer
- Mandrel
- Straight edge
- Chisel
- Files

### 4. Name the operations of sheet metal working

- Shearing
- Bending
- Drawing
- Forming

#### Explain Shearing

It is process of cutting a straight line across a strip, sheet or bar shearing process has three important stages;

- Plastic deformation
- Fracture (Crack propagation)
- Shear

#### 6. Explain Bending

The bending operation involves stretching of metal on the outer surface and compressing it on inner surface along a neutral axis which unchanged. Sheet metal can be bent by hammering on a base by hand or by bending machines.

#### 7. Explain drawing

Drawing operation is used to produce thin walled hollow shapes in sheet metal. It is carried out by using a die and punch on a press machine. If the drawn length is more than the width then the operation is called as deep drawing.

#### 8. Explain forming

For safety purpose, the edges of the sheet metal products are formed of folded. Also, formed edges provide stiffness to the components so that they will not retain their shapes during handling.



## 9. What is press working ?

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Press working is a chinless manufacturing process by which various components are produced from sheet metal.

## 10. Why are press machines preferred?

Press machines are preferred for mass production of similar components, because for each component separate tool is required and the cost of every press tool is very high as compared to the cost of other cutting tools.

## 11. What is the difference between manually and power operated press?

The main difference between manually operated press and power press is that, the former moves by means of a screw and the latter by means of a crankshaft.

### Name any 4 main parts of press.

- (a) Base
- (b) Frame
- (c) Ram
- (d) Pitman
- (e) Clutch and flywheel
- (f) Bolster plate

## 13. What is clutch and flywheel?

Clutch and flywheel: Flywheel is used to store the energy, which is required to maintain the constant speed of the ram whereas, clutch is used to engage or disengage the drive shaft with the flywheel.

## 14. Name die accessories.

Die set, Die, Die block, Punch, Lower shoe, Upper shoe, Punch plate, Back up plate, Stripper plate, Knockout.

## 15. Explain press operations.

Press operations may be grouped into two categories i.e. cutting operations and forming operations. In cutting operations, the workpiece is stressed beyond its ultimate strength whereas; in forming operations, the stresses are below the ultimate strength of the metal.

## 16. Define trimming.

It is used for cutting unwanted excess material from the periphery of a previously formed workpiece.



## 17. Define shaving.

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It is almost similar to trimming, but only small amount of material is removed during the operation as compared to trimming.

## 18. Define lancing.

In this operation, there is a cutting of the sheet metal through a small length and bending this small cut portion downwards.

## PART B

1.
  - i. Explain any one stretch forming operation
  - ii. Define formability and how it is tested?
  - iii. What is drawing operation?
2.
  - i. Explain the metal spinning operation
  - ii. Describe the magnetic pulse forming process
3. What is deep drawing operation? Explain with a neat sketch.
4.
  - i. Explain rubber pad forming process
  - ii. Describe the electro hydraulic forming process
5.
  - i. Describe the explosive forming process
  - ii. How are aluminum kitchen utensils produced?
6.
  - i. Describe the process of hydro forming
  - ii. Describe the various methods of rubber forming. Where are these processes used?
7.
  - i. What is super plastic forming?
  - ii. Describe the hydro forming process with the help of neat diagram
8.
  - i. Explain the characteristic features of sheet metal used in forming process
  - ii. Explain peen forming process
9.
  - i. Find the total pressure, dimensions of tools to produce a washer 5cm outside dia with a 2.4 cm diameter hole, from a material 4 mm thick, having shear strength of 360 N/mm<sup>2</sup>
  - ii. Determine a) blank diameter b) Least no. drawing operations c) force and energy for the first draw with 40% reduction to produce a cup of 5 cm in diameter and 7.5cm



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deep to be drawn from 1.5mm thick drawing steel with a tensile strength of 315 N/mm<sup>2</sup>

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10. i. Estimate the blanking force to cut a blank 30mm and 35 mm long from a 1.5 mm thick metal strip, if the ultimate shear stress of the material is 450 N/mm<sup>2</sup>. Also determine the work done if the percentage penetration is 25% of material thickness
- ii. A blank has a perimeter of 31.75cm. The metal is 1mm thick cold worked 0.15% carbon steel with shear strength of 420 N/mm<sup>2</sup> and percent penetration of 25%. Two holes of 1.25cm diameter each are to be pierced during the same stroke when the piece is blanked. What are the forces required for blanking and for piercing? What is the maximum force the press must exert at any one time without shear?
- iii. Estimate the blanking force to cut a blank 30 mm wide and 35 mm long from a 1.8mm strip if the ultimate shear stress of the material is 450 N/mm<sup>2</sup>. Also determine the work done if the percentage penetration is 25% of material thickness.

## UNIT 5 – Manufacture of Plastic components

### PART A

#### 1. Name the characteristic of polymer.

- Light weight
- High Corrosion resistance.
- Low density.
- Low thermal and electrical properties.
- Low mechanical properties( can be improved by fibre reinforcement of plastics)

#### 2. On what basis are polymers classified and how are they classified ?

According to mechanical response at high temperatures, polymers are classified into two major categories :

- (i) Thermoplastic polymers (Soften when heated and harden when cooled)
- (ii) Thermosetting polymers (Soften when heated and permanently hardened when cooled).

#### 3. Give the mechanism of thermosetting polymers.

These plastics are formed by condensation polymerization. During initial heating, covalent cross-links are formed which anchor the chains together and resist the vibrational and rotational chain motions at high temperature. If heated to excessively high temperature, there occurs severance of these crosslink bonds leading to polymer degradation.



## 4. Where are the thermosetting polymers used?

- Vulcanized rubbers
- Epoxides
- Phenolic
- Polyester resins
- Urea formaldehyde, etc.

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## 5. Define monomer.

It is a small molecule that consists of a single unit / blocking block.

## 6. Define Polymer.

It is macromolecule that is formed by repeated linking of many monomers.

## 7. Define Copolymer.

It is a polymer that is made by adding different monomers.

## 8. Define Isomerism.

It is a phenomenon where different atomic configurations are responsible for the formation of same configuration.

## 9. Define Oligo-polymers.

Oligo polymers or oligomers are polymers that have very short chains with molecular weight in order of 100g/mol. They are mainly liquids or gases.

## 10. Define High polymers.

Polymers which have a very high molecular weight ranging between 10,000 and 1,000,000 g/mol. are known as High-polymers. They are mainly solids.

## 11. Give the three methods of mechanism of polymerisation :

- Addition Polymerization
- Copolymerization
- Condensation polymerization

## 12. Define addition polymerization.

The Polymer is produced by adding a second monomer to the first, a third monomer to this dimer and so on till the long polymer chain is terminated. This process is called as addition polymerization.

## 13. Define copolymerisation and give its example.



It is the addition polymerization of two or more different monomer forming copolymers.

Example : Styrene and butadiene combine to give a copolymer of butadiene - styrene, a rubber used in tyres.

#### **14. Define condensation polymerisation and give its other name.**

Condensation polymerisation is also known as step-growth polymerisation. It is the formation of polymers by step wise intermolecular chemical reactions that normally involve at least two different monomers.

#### **17. Why are additives used and enlist its advantages?**

Additives used to improve the properties and performance of polymers.

- Improve mechanical properties.
- Reduce the cost.
- Improve the thermal processing such as moldability.
- Improve the appearance and aesthetic properties

#### **18. Why are fillers used?**

- It improves the compressive and tensile strengths of the polymer.
- Reduces the cost of the final product.
- Improvement in the thermal and dimensional properties of the polymers

#### **Why are plasticizers used?**

- They improve the ductility, flexibility and toughness of the polymer.
- Hardness and stiffness are reduced.
- During moulding, plasticizers control the flow of the polymer.

#### **20. Why are stabilizers used?**

- They prevent deterioration of polymer due to environmental effects.
- Also prevent deterioration due to ultraviolet radiation.
- Help to extend the life of the finished product.

#### **21. Name the methods of processing thermoplastics.**

Thermoplastics can be processed to their final size and shape with the help of following processes:

- Injection moulding ( plunger and screw type)
- Rotational moulding
- Blow moulding
- Film blowing



- Sheet forming process.

## 22. Give the types of injection moulding.

- Ram or Plunger type Injection Moulding
- Screw type Injection Moulding

## 23. What are the applications of injection moulding?

Typical parts produced by this process are cups, chairs, toys, containers, knobs, automobile parts (car dash-board, car handles, etc), air conditioner parts, plumbing fittings, electrical fittings, etc. This process is used for making components which consists of complex threads. Production of intricate shapes and thin walled parts like radiator fan can be done by this process.

## 24. Enlist the types of blow moulding.

- Injection blow moulding
- Extrusion blow moulding

## PART B

Explain the principle of injection moulding process

- Describe any method of bonding thermoplastics
  - What is laminating? Explain the low pressure method of laminating
- Explain the transfer moulding process
  - Why screw injection moulding machine is better than a ram type injection moulding machine?
- Describe the compression moulding process
  - Describe briefly any two thermoplastics and thermosetting plastics
- What are the processes used for processing of thermoplastic. Explain any one process with suitable sketches
- What is thermoforming process? Explain with a neat sketch
- Describe film blowing operation
- Explain Rotational moulding



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9. i. Explain blow moulding process with its salient features  
ii. What are the additives to be mixed in processing plastics and explain the purpose of each? 21
10. i. Describe different types of plastics with applications of each type  
ii How do thermoplastics differ from thermosetting plastics?

