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Section-1

Q1

Ans -> (i) Centrifugal Casting :-

- It is the process in which metal is poured into a mould which is rotated about its centre rapidly.
- Due to centrifugal force, a continuous press. will be acting on the metal during solidification.
- The impurities are higher than pure metal so impurities are segreate towards the centre.
- This method is generally used for symmetrical cast product.

*> Types of Centrifugal Casting :-

(a) True Centrifugal Casting.
(b) Semi Centrifugal Casting.
(c) Centrifugal Casting.

(ii) Investment Casting :-

- "Precision Investment Casting" or "lost Wax process", though known since long, came in practical prominence during World War II.

- The process broadly consists of preparing an expendable pattern of wax, plastic or frozen mercury by pouring the same into a metal mould or die.

- This pattern is used for making the mould of investment material, which consists of a refractory material and a liquid binder. This investment mould is used for casting.

* Procedure :-

(a) Die Making.
(b) Making Wax pattern.
(c) Assembling the Wax Patterns.
(d) Investing.
    - Mix or Pour Method
    - Dip-Coat Method.
    - Multiple Dip-Coad Method.
(e) Removal of wax patterns.
(f) Pouring and casting.
(g) Cleaning & Inspection.

(iii) Stir Casting :-

- Stir Casting is a type of casting process in which a mechanical stirrer is introduced to form vortex to mix reinforcement in the matrix material.
- It is a suitable process for production of metal matrix composites due to its cost effectiveness, applicability to mass production, simplicity, almost net shaping and easier control of composite structure.
- The mechanical stirrer is used to form the vortex which leads the mixing of the reinforce material which are introduced in the melt.
- Stirrer consist of the stirring rod and the impeller blade.
- The impeller blade may be of various geometry and various no. of blades.
- Flat blade with three no. are the preferred as it leads to axial flow pattern in the crucible with less power consumption.

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(iv) Continuous Casting :-

- This process essentially consists of pouring the molten metal into the upper opening of a vertical metal mould, open at both ends, cooling it rapidly & removing the solidified product in a continuous length from the lower end of the mould.

- This process is largely applicable to brass, bronze, copper & aluminium and to a limited extent to cast iron and steel.

- A no. of processes have been developed for Continuous Casting of various metals & alloys as follows :-

(a) Asarco Process for "Copper" & "bronzes"

(b) Reciprocating Mould process for "brass"

(c) Williams Process for casting of "Carbon" & "alloy steels"

(d) Alcoa Direct Chill process for "aluminium"

(e) Hazelett Process for direct "casting of sheets"

Of these, the most popularly used method is "Asarco Process."