**EXPERIMENT NO. 3 (FOUNDRY SHOP)**

**AIM:** To cast a component using a single piece pattern in foundry shop.

**TOOLS USED**: Moulding box, pattern (wood), sand, clay, binder, molten metal, furnace

* **Theory:** Patterns are the replica or physical models of the final required shape of the casting, made by wood, plastics, Metals, Plaster of paris etc.
* Some common types of patterns are:
* 1.Solid pattern 5.Match plate pattern
* 2. Split piece pattern 6. Sweep pattern
* 3. Three piece pattern 7. skeleton Pattern
* 4. Loose piece pattern 8.shell Pattern.
* **Solid /single piece pattern:** This pattern generally used in simple processes. It is applied in small scale production. The important characteristic of this pattern is that there is no need of joint in the mold area.
* **Sand casting terminologies:** The terms used in sand casting terminology are:
* **Flask**: A moulding flask is one which holds the sand mould intact. It is made up of wood for temporary applications or metal for long‐term use.
* **Drag:** Lower moulding flask.
* **Cope**: Upper moulding flask.
* **Cheek** : Intermediate moulding flask used in three‐ piece moulding.
* **Pattern:** Pattern is a replica of the final object to be made.
* **Parting line**: This is the dividing line between the two moulding flasks that makes up the sand mould.
* **Bottom board:** This is a board normally made of wood, which is used at the start of the mould making.
* **Moulding sand**: The freshly prepared refractory material used for making the mould cavity. It is a mixture of silica, clay and moisture in appropriate proportions.
* **Core:** Used for making hollow cavities in castings.
* **Pouring basin**: A small funnel‐shaped cavity at the top of the mould into which the molten metal is poured.
* **Sprue:** The passage through which the molten metal from the pouring basin reaches the sprue base well.
* **Runner:** The passage ways in the parting plane through which molten metal flow is regulated before they reach the mould cavity.
* **Gate:** The actual entry point through which molten metal enters the mould cavity in a controlled rate.
* **Chaplets**: Chaplets are used to support cores inside the mould cavity.
* **Chills:** Chills are metallic objects, which are placed in the mould to increase the cooling rate of castings.
* **Riser:** It is a reservoir of molten metal provided in the casting so that hot metal can flow back into the mould cavity when there is a reduction in volume of metal due to solidification.

