Manufacturing Processes

Quiz #4

11.5 What is the function of a core?

Answer:

For castings with internal cavities or passages, such as those found in an automotive engine block or a valve body, cores are utilized. Cores are placed in the mold cavity to form the interior surfaces of the casting and are removed from the finished part during shakeout and further processing.

Cores are placed in the mold to form hollow regions or otherwise define the interior surface of the casting. Cores also are used on the outside of the casting to form features such as lettering on the surface of a casting or deep external pockets.

11.17 Describe the drawbacks to having a riser that is (a) too large and (b) too small.

Answer:

Risers serve as reservoirs, supplying molten metal to the casting as it shrinks during solidification.

Excessively designed risers waste more material in castings, while the shrink cannot be compensated if the riser is too small.
12.3 What is shrinkage allowance? Machining allowance?

Answer:

**Shrinkage Allowance** To avoid cracking of the casting curing cooling, there should be allowances for shrinkage during solidification. Allowances for shrinkage, known as patternmaker’s shrinkage allowances, usually range from about 10 to 20 mm/m.

**Machining allowance** Because most expendable-mold castings require some additional finishing operation, such as machining and grinding, allowances should be made in casting design for these operations. Machining allowances, which are included in pattern dimensions, depend on the type of casting and increase with the size and section thickness of castings. Allowances usually range from about 2 to 5 mm for small castings to more than 25 mm for large castings.