



M.Sc Final Exam
Metal Casting Processes

Answer All The following Questions

Q1 (40 Marks)

Define, explain, and state the process for each of the following processes include your answer with the equipment, procedures, advantages, limitations, and the applications:

1. Permanent Casting
2. Die Casting
3. Centrifugal Casting
4. Shell Casting

Q2 (20 Marks)

- a) The casting shown in Fig.1, is to be made from steel using a wooden pattern. Assuming only shrinkage allowance, calculate the dimensions of the pattern.
- b) Calculate the gating system requirements for the casting shown in Fig.2, to be cast from C30 steel.

Q3 (40 Marks)

- a) Explain the riser size and directional solidification.
- b) Discuss the riser location and directional solidification.
- c) Atmospheric pressure is an important and not always well understood factor in risering of casting, explain in detail and comment.
- d) Define and explain the methods used in practice for controlling the solidification in metal casting.

Wishing the best of luck for all of you

Prof. Dr. Tawfik Elmidany

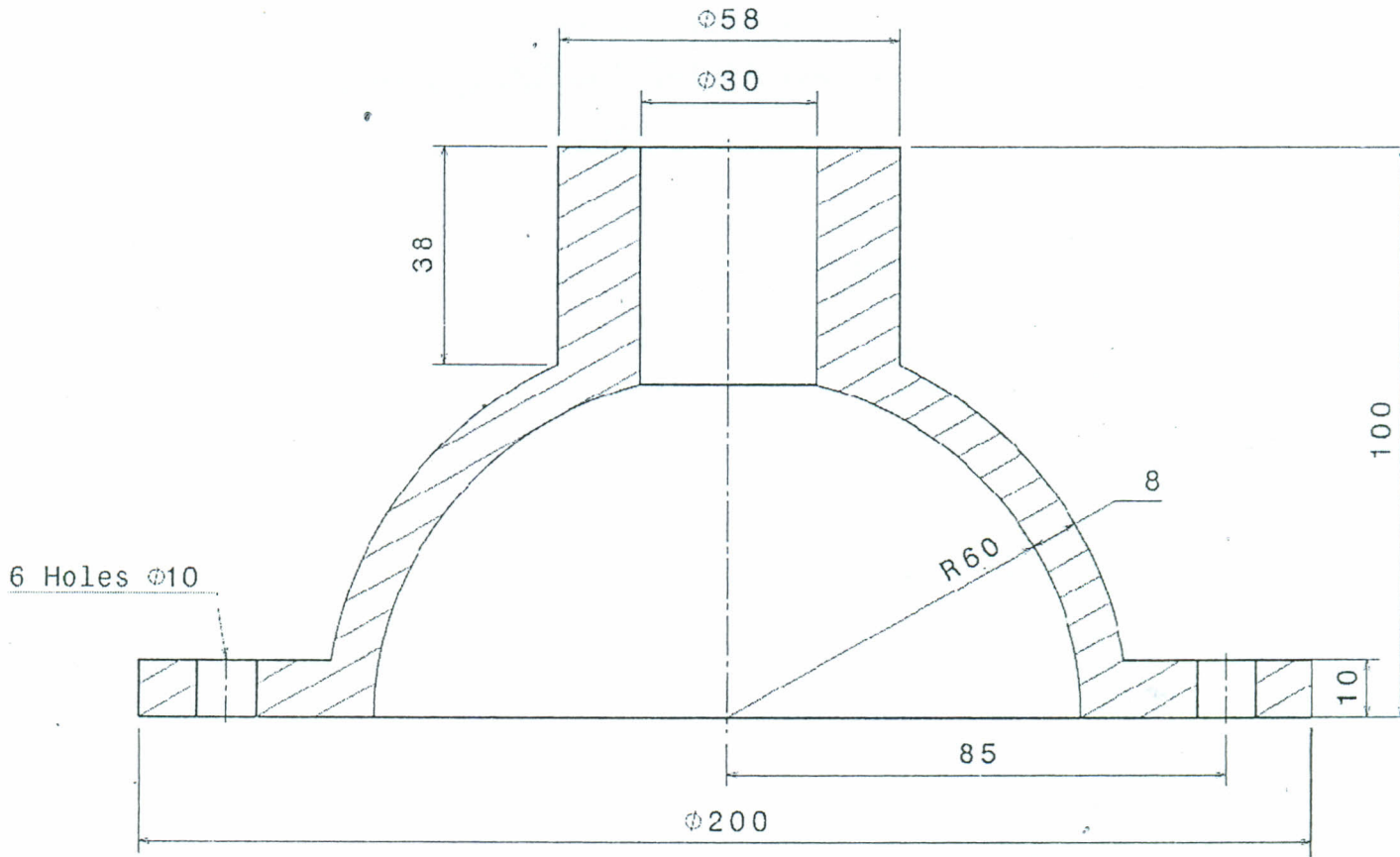


Fig. 2

$\phi 80$

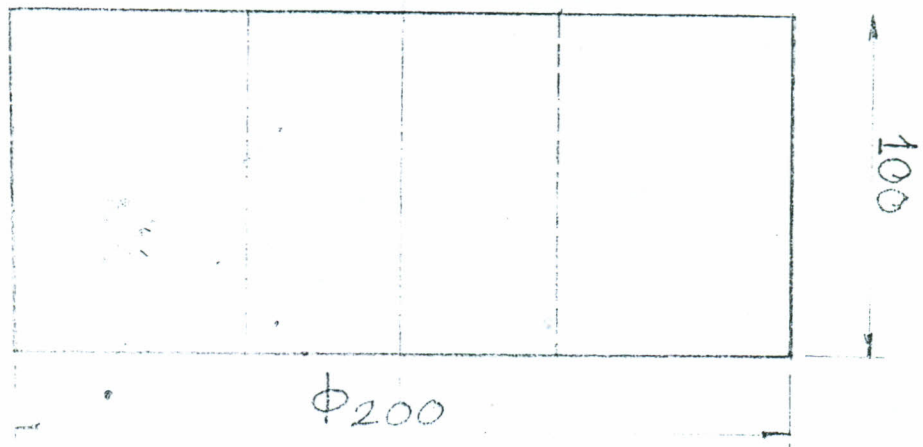


Fig. 1