[Total No. of Questions - 8] [Total No. of Printed Pages - 2]
(2125)

15376

M. Tech 1st Semester Examination

Metal Casting (NS)

PE-101

Time : 3 Hours **Max. Marks : 100**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt any five questions.

1. (a) Define standard permeability of sand. Explain the working of a permeability meter. (10)

   (b) Describe the AFS method to determine the size and distribution of sand grains in foundry sand. (10)

2. (a) List and explain the function of various additives present in foundry sand (10)

   (b) Describe the various desirable features of core sand mixture. (10)

3. (a) Describe the process of homogeneous nucleation during the solidification of a casting. (10)

   (b) Explain the development of columnar and partially equiaxial grains during the solidification of a casting with sketches. (10)

4. (a) Explain the relationship between constitutional supercooling and dendrite structure formation. (10)

   (b) Explain the various factors influencing the start and end of freezing in an alloy with no eutectic formation. (10)

[P.T.O.]

5. (a) Define the term riser and the primary functions of a riser in a casting. (10)

   (b) What is the use of chills in a casting process? Differentiate between external and internal chills. (10)

6. (a) Describe the various types of gates used in a casting with neat sketches. (10)

   (b) Explain the directional solidification concept in castings and its influence on gating design. (10)

7. (a) Describe the various objectives of a gating system. (10)

   (b) Describe the following terms in reference to a gating system:

   (a) Sprue

   (b) Choke

   (c) Runner (10)

8. Write notes on:

   (a) Shell Molding.

   (b) Cold chamber dies casting.

   (c) Investment casting. (20)