Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech.(PE) (Sem.–1)

METAL CASTING

Subject Code : PE-501

M.Code : 39002

Date of Examination : 14-01-23

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

INSTRUCTION TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**
3. **Draw Neat and Clear Sketch wherever needed.**

1. a) Distinguish between characteristics of natural and synthetic sand.

   b) Describe the bonding mechanism of silica-water-clay systems.

2. a) Explain the significance of critical radius of nucleus.

   b) Differentiate between homogenous nucleation and heterogeneous nucleation. Why homogenous nucleation is more difficult than heterogeneous nucleation?

3. a) Explain the significance of mould constant in metal casting.

   b) What is fluidity of metal? Explain various factors that affect fluidity.

4. a) Discuss the procedural steps in designing a risering system.

   b) Describe the various types of chills used in casting.

5. a) Explain the hot and cold die casting process for the casting of copper and its alloys.

   b) Explain the working principle, applications and limitations of vacuum moulding process.

6. a) Explain the casing process of brass ingot with simple sketch..

   b) What are the precautions to be taken for producing defect free castings of non - ferrous alloys?

7. a) Explain the term '*Constitutional Super Cooling*'. How it affects the solidification of metal?

   b) What do you mean by '*Sintering Adhesion*' ? Explain.

8. Write short notes on the following :

   a) Investment moulding

   b) Swelling of clays

   c) Effect of appendages on risering

   d) Core Sands.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.