

Roll No.

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech (Mechanical Engineering) (Sem.-3)

ADVANCED CASTING PROCESSES

Subject Code : MTME-210

M.Code : 74986

Time : 3 Hrs.

Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT question.
2. Each question carries TWENTY marks.

- Q1 a) Briefly describe the important characteristics of moulding sand.
- b) What are the different types of clays? Discuss about the colloidal behaviour of clays used in foundry.
- Q2 a) Explain the types of pattern materials used in casting process. Also explain various allowances provided on patterns.
- b) Discuss the bonding mechanism of silica-water-clay system. Briefly describe the effect of pH of sand on flocculation of clay using suitable graph.
- Q3 a) What do you know about directional solidification in castings? Why is it essential and how it is achieved for a sound casting?
- b) Define Fluidity of metal. Briefly describe with figure the spiral test to measure the fluidity of metals.
- Q4 a) What are the effects of mould metal reactions on the soundness of a casting?
- b) What is constitutional super cooling of alloys? How it is affected by range and rate of solidification?
- Q5 a) Explain Chene's method of riser design.
- b) What is aspiration of gases? How it is prevented during casting of metal? Also write the main requirements of a good gating system.

- Q6 a) Explain the die casting of aluminium and its alloys with help of neat sketches.
- b) Differentiate between the Shell molding process and CO₂ molding processes.
- Q7 a) What is ceramic shell mould casting process? Explain this process with help of neat sketches. Write the advantages, limitations and product applications of ceramic shell mould casting process. How this process differs from shell moulding?
- b) With the help of a diagram explain the working of a continuous casting process. List its main advantages, limitations and applications.
- Q8 a) Write short note on quality control in castings.
- b) Explain various casting defects giving neat sketches and also explain their causes, and remedies.

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