

Roll No. 

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Total No. of Pages : 02

Total No. of Questions : 08

M.Tech (ME) (2017 Batch) (Sem.-2,3)

**ADVANCED CASTING PROCESS**

Subject Code : MTME-210

Paper ID : [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) Discuss various types of patterns used in sand casting giving their neat sketches, advantages and applications.
- b) Describe the ingredients of moulding sand, giving the characteristic features of various ingredients.
- Q2 a) Define permeability of mould. Discuss the procedure for measuring the permeability of moulding sand giving a neat sketch.
- b) Explain how nucleation occurs and grows in the freezing of the pure metal.
- Q3 a) List and discuss briefly the factor that affects the fluidity of metals.
- b) Explain the formation of casting from liquid metal poured in a mould. Discuss the conditions which favour the formation of fine equi-axial grains.
- Q4 a) Describe the various components of a good running/gating system. Discuss the functions to be performed by each.
- b) Give a short review about the directional solidification process. Discuss how the directional solidification can be controlled.
- Q5 a) The flow rate of liquid metal into the downsprue of a mold = 1 liter/sec. The cross-sectional area at the top of the sprue =  $800 \text{ mm}^2$  and its length = 175 mm. What area should be used at the base of the sprue to avoid aspiration of the molten metal?
- b) The metal contracts in volume as it cool in the mould. Discuss the stages in which the contraction of the metal takes place.

- Q6 a) Name the centrifugal casting methods. With neat sketches explain the working of vertical and horizontal type true centrifugal casting process.
- b) Discuss the working principle, applications and limitations of shell moulding process giving a neat sketch.
- Q7 a) Write short note on 'effect of appendages on risering'.
- b) Discuss five casting defects giving neat sketches and explain their causes and remedies.
- Q8 a) Discuss the working principle, applications and limitations of centrifugal casting process giving a neat sketch.
- b) Discuss briefly the steps taken for ensuring quality control in castings.

www.FirstRanker.com