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Total number of printed pages – 2

B. Tech  
PCMT 4305

## Sixth Semester Examination – 2013

### SOLIDIFICATION AND CASTING PROCESSES

BRANCH : BIOTECH

QUESTION CODE : A202

Full Marks – 70

Time : 3 Hours



Answer Question No. 1 which is compulsory and any **five** from the rest.

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10
- (a) What is casting yield ?
  - (b) What do you mean by planar growth ? Write the factors hindering planar growth.
  - (c) Explain vacuum sealed casting process.
  - (d) What is gating ratio ?
  - (e) What is the use of riser ?
  - (f) Explain the formation of dendritic structure.
  - (g) Write the advantages, disadvantages of investment casting process.
  - (h) What is the function of gate ? Give a classification of the gating systems.
  - (i) What are the causes behind rat tail defect and how can we prevent it ?
  - (j) What is eutectic freezing ?

P.T.O.

2. (a) Explain role of Ellingham diagram in melting of metals for casting purposes. 5
- (b) Discuss about industrial melting of Aluminium. 5
3. (a) What are the different types of manufacturing processes ? How casting process is more advantageous than other forming processes ? 5
- (b) Briefly describe characteristics of mould and its components with reference to mold factors in metal flow and molding factors in casting. 5
4. With neat sketch describe centrifugal casting process. Write down its advantages, disadvantages and its application. 10
5. (a) Discuss about post melting treatment of casting. 5
- (b) Describe die casting. 5
6. Discuss various casting defects, their causes and remedial measures. 10
7. (a) Explain nucleation and growth during solidification. 5
- (b) Discuss how the cast structure can be refined and modified. 5
8. Write short notes on any **two** of the following : 5×2
- (a) Full mold casting
- (b) Cellular growth
- (c) Independent nucleation.

