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Total Number of Pages:

**B.TECH**  
**PCMT 4305**

**Sixth Semester (Back) Examination – 2013**  
**SOLIDIFICATION AND CASTING (NEW)**  
**BRANCH: MME**  
**Time: 3 Hours**  
**Max marks: 70**

**Answer Question No.1 which is compulsory and any five from the rest.**  
**The figures in the right hand margin indicate marks.**

- Q1 Answer the following questions: (2 x 10)
- a) Explain how growth occurs in solidification process.
  - b) Describe Chowrinov rule?
  - c) What is crystallization?
  - d) What is hot tear? How can we eliminate it?
  - e) How does cellular growth occur?
  - f) What is Mis run?
  - g) How vacuum sealed casting process is advantageous than other forming processes?
  - h) What is progressive solidification?
  - i) Why cold shut occurs?
  - j) How centrifugal casting process is more beneficial than other casting processes?
- Q2 a) Discuss different metallurgical defects in casting process, their causes & remedial measures. (5)
- b) What is the function of riser and give a classification of risers. (5)  
Which type of riser is more advantageous and Why?
- Q3 a) Explain briefly planar growth and factors hindering planar growth. (5)
- b) Describe investment casting process. Write its advantages, (5)  
disadvantages and application.
- Q4 What is gate? What is the requirement and purpose of gating (10)  
system in casting? Explain different types of gating systems.
- Q5 a) Why does moulding material defect and pouring metal defect (5)



- occur in casting and how can these be eliminated?
- b) What are the advantages of addition of alloying element over pure metals? (5)
- Q6 a) Explain the role of Ellingham diagram in melting of metals for casting purposes. (5)
- b) Explain different types of segregation. (5)
- Q7 Differentiate between (any two) (5 x 2)
- a) Homogeneous nucleation and Heterogeneous nucleation
- b) Open riser and blind riser
- c) Cellular growth and dendritic growth
- Q8 Write short notes on any two:- (5 x 2)
- a) Independent nucleation
- b) True centrifugal casting
- c) Casting yield