Code No: R22035 **R10** SET - 1

II B. Tech II Semester Supplementary Examinations, April-2018
METALLURGY AND MATERIAL SCIENCE
(Com. to ME, AME, MM)

Time: 3 hours Max. Marks: 75

Answer any **FIVE** Questions
All Questions carry **Equal** Marks
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1. a) What do you mean by crystallization? Derive an expression for critical size of a nucleus during solidification of a liquid metal.
   b) Explain the importance of critical size of the nucleus.

2. a) Briefly discuss about classification of solid solutions with examples.
   b) Write short notes on the following:
   i) Intermediate alloy phases ii) Electron compounds

3. a) With the help of a cooling curve explain the solidification of a pure metal.
   b) Derive an expression for critical size of a nucleus during solidification of a metal.

4. Describe the different types of cast irons with respect to their composition, microstructure, properties and applications.

5. Discuss about different types of heat treatments given to the steels and explain their advantages and limitations.

6. a) Discuss about castable Aluminium alloys. Explain the composition and industrial uses of LM6 alloys.
   b) Giving examples explain the applications of non-heat treatable Aluminium alloys.
7. a) How classification of ceramic materials is done? Explain.
   b) Explain about electrolytic deposition technique adopted for metal powder manufacture.

8. a) What is a composite material? Explain the important characteristics of its constituents.
   b) Briefly discuss about C – C composites.
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