

Code No: 53018

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD

B.Tech II Year I Semester Examinations, May/June - 2015

METALLURGY AND MATERIAL SCIENCE

(Common to ME, MCT, AME)

Time: 3 hours

Max. Marks: 75

Answer any five questions
All questions carry equal marks

- 1.a) What is the influence of grain size on material properties?
b) Explain how the grain size is determined by different methods. [7+8]
- 2.a) What is the necessity of alloying?
b) Write a brief note on electron compounds. [7+8]
- 3.a) Explain the importance and applications of the following:
i) Phase Rule
ii) Lever rule
b) Draw the isomorphous binary phase diagram and explain the cooling behavior of 30%A-70%B alloy. [8+7]
- 4.a) Differentiate between annealing and normalizing.
b) Draw the microstructure and write the properties and applications of white cast iron and gray cast iron. [7+8]
- 5.a) What is cryogenic treatment? Explain the applications of this treatment.
b) Differentiate between annealing and normalizing with respect to process, microstructure and the properties of steels. [7+8]
- 6.a) Differentiate between alpha, beta and alpha-beta titanium alloys.
b) What is meant by anodizing of aluminium? Explain. [8+7]
7. Write short notes on the following:
a) Ceramics for wear applications.
b) Fiber reinforced composites. [8+7]
- 8.a) What are the specific properties that make composites attractive for structural applications?
b) Differentiate between dispersion strengthened and particle strengthened composites. [8+7]

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