

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech II Year I Semester Supplementary Examinations June 2019

MATERIAL SCIENCES AND METALLURGY

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

(Answer all Five Units 5 x 12 = 60 Marks)

UNIT-I

- 1 a Explain the important properties of Engineering Materials? 6M
b Explain types of Solid Solutions? 6M

OR

- 2 a Describe the effect of grain boundaries on the properties of metals? 5M
b What are Hume Rothely's Rules? 7M

UNIT-II

- 3 Explain the binary phase diagram of Fe-Fe₃C. 12M

OR

- 4 a With the help of an example, explain the Eutectic system. 5M
b What are different types of cooling curves? Briefly explain. 7M

UNIT-III

- 5 a With neat sketch explain about the structure of Grey Cast-Iron, and write its applications. 7M
b Differentiate Ferrous and Non-Ferrous Materials. 5M

OR

- 6 What are the typical alloys of copper used in Engineering? Describe briefly their composition and uses. 12M

UNIT-IV

- 7 a Explain about TTT Diagram of Steel. 6M
b Enumerate various Heat Treatment processes and explain any two of them in details. 6M

OR

- 8 a What is importance of Age Hardening Process? 6M
b Define Heat Treatment. And what is its importance in materials? 6M

UNIT-V

- 9 a Write short notes on Polymetric materials? Give its applications. 6M
b Differentiate reinforced and Fiber-reinforced materials. 6M

OR

- 10 a Explain about Crystalline Ceramics. 6M
b Explain about Carbon-Carbon Composites. 6M

END