

Code No: 153BC

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year I Semester Examinations, September - 2021

MATERIAL SCIENCE AND METALLURGY

(Common to ME, MCT)

Time: 3 hours

Max. Marks: 75

Answer any five questions

All questions carry equal marks

- 1.a) Explain various point defects with the help of neat sketches.
b) Describe the dislocation strengthening mechanism. [8+7]
- 2.a) Define slip system and discuss the importance of slip system in describing the properties of materials.
b) Explain critically resolved shear stress with the help of neat diagram. [8+7]
3. Draw Fe-Fe₃C phase diagram and label the phases present in it. [15]
- 4.a) Differentiate between annealing and normalizing processes.
b) What is hardening? Explain different hardening methods. [8+7]
- 5.a) Explain continuous cooling curves.
b) What do you mean by case hardening? How do you classify the case hardening methods? [7+8]
- 6.a) Explain the nitriding process.
b) Explain the flame and induction hardening methods with the help of neat sketches. [7+8]
- 7.a) What is the necessity of alloying of steels? How alloy steels are classified?
b) Explain about various types of tool steels. [8+7]
8. List out various important copper alloys. Discuss their composition, properties and applications. [15]

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