

Reg. No:

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

B.Tech II Year I Semester Supplementary Examinations November-2020
MATERIALS SCIENCES & METALLURGY

(Mechanical Engineering)

Max. Marks: 60

Time: 3 hours

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

UNIT-I

- 1 a Draw a neat sketch of BCC crystal structure and calculate its packing factor, coordinate number. 6M
b Explain crystal imperfections. 6M

OR

- 2 What is Material science and metallurgy? Explain the Types of Bonds in solids with neat sketches. 12M

UNIT-II

- 3 Draw the Fe-Fe₃C equilibrium diagram and label all the points, lines and areas. Explain its important feature. 12M

OR

- 4 a Write the peritectic, eutectic and eutectoid reaction of Fe-Fe₃C phase diagram. 8M
b Draw the allotropy of iron and their properties. 4M

UNIT-III

- 5 a Explain briefly on Carbon Steel. 6M
b Explain the structure and properties of Titanium and its alloys. 6M

OR

- 6 a Explain the structure and properties of Copper and its alloys. 8M
b Explain the structure and properties of malleable cast iron. 4M

UNIT-IV

- 7 a Write about Annealing, normalizing, Hardening. Draw and explain the structures. 8M
b Explain the toughness How it is measured and explain their types? 4M

OR

- 8 a What is Fracture Mechanism? Explain the mechanical properties of materials and Fracture. 8M
b What is cryogenic treatment? How is it done for the alloys? 4M

UNIT-V

- 9 a What is ceramic material? Explain crystalline ceramics. 6M
b Discuss about the Glass micro structure and properties. 6M

OR

- 10 a Enumerate the difference between the particle and Reinforced composites. 4M
b What is composite material? How is it classified? Give a short note. 8M

*** END ***