

Reg. No:

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

B.Tech II Year II Semester Regular Examinations October-2022

MATERIALS SCIENCE

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

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

UNIT-I

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|---|---|---|----|----|
| 1 | a | Explain the primary type of Bonds in solids with neat sketches. | L1 | 6M |
| | b | Draw a neat sketch of BCC crystal structure and calculate its packing factor and its coordinate number. | L2 | 6M |

OR

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|---|--|---|----|------|
| 2 | | Discuss about the Mechanical and Technological Properties of Engineering Materials. | L2 | 12 M |
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UNIT-II

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|---|---|---|----|----|
| 3 | a | Construct a phase diagram and explain briefly and list out different types of phase diagrams. | L6 | 6M |
| | b | Define invariant reactions in phase Diagram with examples. | L1 | 6M |

OR

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|---|--|--|----|-----|
| 4 | | Draw and explain the Fe-Fe ₃ c phase diagram invariant reactions. | L1 | 12M |
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UNIT-III

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| 5 | a | Explain the structure and properties of Spheroidal graphite cast iron. | L2 | 6M |
| | b | Give a composition of malleable cast iron. List out applications of malleable cast Iron. | L1 | 6M |

OR

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| 6 | | Explain the structure and properties of white cast iron. | L4 | 12M |
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UNIT-IV

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| 7 | a | Explain the toughness .How it is measured and explain their types. | L2 | 6M |
| | b | Define heat treatment. List out the stages in the heat treatment. | L1 | 6M |

OR

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| 8 | | Define fracture? Explain effect of material properties on fracture. | L2 | 12M |
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UNIT-V

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| 9 | a | Compare the particle and Reinforced composites. | L4 | 6M |
| | b | Differentiate between composites and alloy. | L5 | 6M |

OR

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|----|--|--|----|-----|
| 10 | | Explain formation of polymers. Distinguish between Thermoplastics, Thermosetting plastics and list out its applications. | L2 | 12M |
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