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SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)**B.Tech I Year II Semester Regular Examinations May 2019****MATERIALS ENGINEERING**

(Mechanical Engineering)

Time: 3 hours

Max. Marks:60

PART-A(Answer all the Questions **5 x 2 = 10** Marks)

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|----------|---|----------------------------|
| 1 | a What is a coordination number?
b What is age hardening?
c What are the four basic types of equilibrium diagram?
d Explain the applications of spheroidal graphite cast iron.
e What is a ceramic compound? | 2M
2M
2M
2M
2M |
|----------|---|----------------------------|

PART-B(Answer all Five Units **5 x 10 = 50** Marks)**UNIT-I**

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|-----------|--|----------|
| 2 | What are the mechanical and technological properties of engineering materials? Explain. | 10M |
| OR | | |
| 3 | a Draw a neat sketch of FCC crystal structure and calculate its packing factor, coordinate number.
b Draw a neat sketch of BCC crystal structure and calculate its packing factor, coordinate number. | 5M
5M |

UNIT-II

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|-----------|--|----------|
| 4 | a Draw the Eutectoid system diagram.
b Explain and Draw the Equilibrium cooling and heating of pure metals/alloys system. | 4M
6M |
| OR | | |
| 5 | Write the peritectic, eutectic and eutectoid reaction of Fe-Fe ₃ C phase diagram. | 10M |

UNIT-III

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|-----------|--|----------|
| 6 | Explain the structure and properties of below steel.
i) Hadfield manganese steels ii) Tool and die steels. | 5M |
| OR | | |
| 7 | a What is Effect of alloying elements on Iron – Iron carbon system? Explain.
b Explain the structure and properties of Ductile cast iron. | 5M
5M |

UNIT-IV

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| 8 | What are TTT diagrams? How they prepared? What is their significance? Explain in detail. | 10M |
| OR | | |
| 9 | What are heat treatment processes? Explain in detail. | 10M |

UNIT-V

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|-----------|---|----------|
| 10 | a What are cermets? And What are their properties? Explain.
b How the cermets manufactured? Give Examples. | 5M
5M |
| OR | | |
| 11 | What are the various methods of component manufacture of composites? Explain. | 10M |

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