Q.P. Code: 18ME0303 **R18**

Reg. No. | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations Dec 2019

MATERIALS ENGINEERING

Time: 3 hours Max. Marks:60

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

PART-A

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

1	a	Explain screw dislocation.	2M
	b	What is a chemical affinity factor or electro-negativity?	2M
	c	What is allotropy?	2M
	d	What is annealing.	2M
	e	What is a carbon composite?	2M

PART-B

(Answer all Five Units 5 x 10 = 50 Marks)

UNIT-I

2		Explain the effect of grain boundaries on the properties of alloys, also determinc the grain size.	10M
		OR	
3		Draw a neat sketch of HCP and Simple cubic crystal structure and calculate its packing factor, coordinate number.	10M

UNIT-II

4	a	What is Phase? What are different types of phase diagram?	5M
	b	Define invariant reactions in phase Diagram with examples.	5M
		OR	
5		Draw the Fe-Fe3 c equilibrium diagram and label all the points, lines and areas.Explain its important features.	10M

UNIT-III

6	a	What is steel? What are the classifications of the steels?	5M
	b	Explain the structure and properties of Spheriodal graphite cast iron.	5M
		OR	
7		Explain the structure and properties of Aluminum and its alloys.	10M

UNIT-IV

8		Explain the below i) surface - hardening methods ii) Age hardening Treatment	10M
		OR	
9		What is Fracture Mechanism? Explain the mechanical properties of materials and Fracture.	10M

UNIT-V

10		Explain Metal matrix composite. Discuss about their properties.	10M
		OR	
11	a	Enumerate the difference between the particle and Reinforced composites.	5M
	b	What is ceramic material? Explain crystalline ceramics.	5M

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