Course Code: 1930312 Roll No: MLRS- R19

MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

II B.Tech I Sem Supplementary Examination, July-2022

Material Science and Metallurgy

(MECHANICAL)

Time: 3 Hours. **Max. Marks: 70**

Note: 1. Answer any FIVE questions.
2. Each question carries 14 marks and may have a, b as sub questions.

1	a)	What are crystal defects? Explain	7M	CO1	L1
	b)	Explain the edge dislocation with neat sketch	7M	CO1	L2
2		Explain slip phenomenon	14M	CO1	L1
3	a)	What is the necessity of alloying? and why alloys are more preferred over metals	7M	CO2	L4
	b)	Explain the invariant reactions eutectic and eutectoid	7M	CO2	L2
4		Illustrate Iron Iron-carbide (Fe-Fe3C) phase diagram schematically, label liquidus, solidus, all phases in it	14M	CO2	L1
5	a)	Specify the differences between annealing and normalizing heat treatment processes	7M	CO3	L2
	b)	Explain the process of Hardening of steels	7M	CO3	L2
6		Draw a neat sketch of Isothermal transformation (TTT) diagram for heat treatment for steel and explain it	14M	CO3	L2
7	a)	List out different case hardening methods	7M	CO4	L1
	b)	With neat sketch explain the process of flame hardening heat treatment process	7M	CO4	L2
8		Differentiate between grey cast iron and spheroidal cast iron in terms of microstructure, properties, composition and applications	14M	CO5	L4

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