Code No: **20ME2T01**

R20

I B. TECH II SEMESTER REGULAR EXAMINATIONS, SEPTEMBER - 2021
MATERIALS SCIENCE
(Mechanical Engineering)

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

Note: Answer **ONE** question from each unit **(5 × 14 = 70 Marks)**

UNIT - I

1.	a)	Explain Hume Ruther's rules.	[7M]
	b)	What is a Peritectic reaction?	[7M]

(OR)

2.	a)	What are intermediate alloy phases? Why is it necessary?	[7M]
	b)	What are Electron Compounds? Explain.	[7M]

UNIT – II

3.	a)	Explain in brief different strengthening mechanisms in metals and alloys.	[14M]

(OR)

4.	a)	What are isomorphism, allotrophy and monotectic reactions?	[7M]
	b)	Deduce the relationship between True strain and Engineering Strain.	[7M]

UNIT – III

5.	a)	Differentiate between Hardening and Tempering of Steels.	[7M]
	b)	Explain the process of carburizing and Nitriding treatments for surface hardening.	[7M]

(OR)

6.	a)	What are super alloys? List out applications, advantages and disadvantages.	[7M]
	b)	Define Annealing. What are the main aims of Annealing?	[7M]

UNIT – IV

7.	a)	Write a short notes on Aluminium and its alloys.	[7M]
	b)	Write a short notes on copper and its alloys.	[7M]

(OR)

8.	a)	Write a short notes on Malleable cast iron.	[7M]
	b)	Draw Al-Cu phase diagram and explain in brief.	[7M]

UNIT - V

9.	a)	Define the glass transition temperature.	[7M]
	b)	Write a short notes about composites.	[7M]

(OR)

10.	a)	What are glass materials? Explain.	[7M]
	b)	Write a short notes on crystalline ceramics.	[7M]

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