



R18 Regulation **Subject code: 2P3CD**
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
 (Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech III Semester Supplementary Examinations, July 2024

Metallurgy & Material Science
 (ME)

Maximum Marks: 70

Date: 25.07.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	Bloom Tx
1	Distinguish between Unit cell and space lattice.	1	L1
2	Define FCC and BCC.	1	L1
3	What do you mean by Isomorphous system?	2	L1
4	Distinguish between Intermetallic Compound and Electron compound.	2	L1
5	Define Normalising.	3	L1
6	Define Phase diagram.	3	L1
7	Write the classification of cast iron?	4	L1
8	Write short note on white cast iron?	4	L1
9	Write the classification of polymers?	5	L1
10	Write a short note on alloys?	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	What is the role of grain size on the properties of materials? [10M]	1	L2
OR			
12	a) State Hume-Rothery's rules for the formation of substitutional solid solution. [5M] b) How do you determine the Miller Indices? Explain it with suitable example. [5M]	1	L2
13	Apply the Lever rule to phase equilibrium in an alloy of 15% B and 85% A when a liquid of 45% B is in equilibrium with a solid solution of 95% A. [10M]	2	L2
OR			
14	Draw and explain the phase diagram where two components are completely soluble in both liquid and solid state with suitable examples. [10M]	2	L2
15	Explain TTT diagram with neat sketch. [10M]	3	L2

	OR		
16	Define Surface hardening and explain its methods. [10M]	3	L2
17	Explain brass with equilibrium diagram and mechanical properties? [10M]	4	L2
	OR		
18	Explain Grey cast iron with equilibrium diagram and mechanical properties. [10M]	4	L2
19	Write the classification, properties, applications and advantages and disadvantages of glass? [10M]	5	L2
	OR		
20	Write the classification and application of ceramics? [10M]	5	L2