BT-MRE-IV(S)-04.21-0293 Reg. No. [ ][ ][ ][ ][ ][ ][ ][ ]

A

B.Tech. Degree IV Semester Supplementary Examination in Marine Engineering April 2021

MRE 1403 METALLURGY AND MATERIAL SCIENCE

(2013 Scheme)

Time: 3 Hours Maximum Marks: 100

(5 × 20 = 100)

I.	(a)	Explain point defect and line defect in crystals.	(8)
	(b)	What is "Miller indices" of crystal planes?	(6)
	(c)	Write notes on Atomic packing factor.	(6)
		OR	
II.	(a)	Explain Planar defects and Volume defects.	(8)
	(b)	What is 'Polymorphism'?	(6)
	(c)	Write notes on Soldification of Metals.	(6)
III.	(a)	Explain Gibb's Phase Rule.	(8)
	(b)	Explain with neat sketch the iron-carbon diagram.	(12)
		OR	
IV.	(a)	Draw and Explain phase equilibrium diagram of Cd-Bi.	(10)
	(b)	Explain Eutectic, Pentectic and Eutectoid Reactions.	(10)
V.		Write notes on:	
	(a)	Heat Treatment of Steel.	(10)
	(b)	Metal Coating Techniques.	(10)
		OR	
VI.	(a)	Explain Classification Society rules for alloy steal in ship building.	(10)
	(b)	List different verities of cast iron with its major use.	(10)
VII.	(a)	Differentiate between Hot working and cold working.	(8)
	(b)	In deformation of metals, Explain Elastic, inelastic and visco elastic behavior.	(12)
		OR	
VIII.	(a)	Explain Griffith's Theory.	(10)
	(b)	Write notes on (i) Fatigue (ii) Creep	(10)
IX.		Explain any two types of non-destructive test in detail.	(20)
		OR	
X.		Explain the applications of chromium and titanium in ship building	(20)

***