## Paper / Subject Code: 51624 / Material Metallurgy

## 14/12/2024 MECHANICAL SEM-III C SCHEME MATERIAL METALLURGY QP CODE: 10070569

mpt a	ny three questions from remaining five questions.	
Writ (a) (b)	e notes on <b>any FOUR</b> Explain the advantages of polymer over metallic materials. Allotropic form of iron	[20]
(c)	Critical Resolved Shear Stress (C.R.S.S.)	
(d) (e)	Ductile to Brittle Transition Temperature (DBTT) Normalizing	
(a)	Classify various types crystal defects? Discuss line defects and their types.	[10]
(b)	State and explain Griffith's theory for brittle material with derivation	[10]
(a)	Draw the iron -iron carbide equilibrium diagram and write the important transformation seen in the diagram.	[10]
(b)	What is Nitriding and explain types of nitriding processes. Explain the heat treatment before nitriding.	[10]
(a)	What is recrystalliztion annealing? Discuss the various stages of	[10]
	recrystallization annealing with neat sketch	
(b)	Define fatigue failure. Discuss fatigue testing. Explain interpretation of S-N curve for ferrous and non –ferrous metals.	[10]
(a) \$	Draw a binary alloy phase diagram with example	[10]
(b)	Write note on Shape Memory alloys	[6]
(c)	Explain ceramics and its applications.	[4]
(a) (b)	Write note on composites and its applications.	[8]
	Explain Magnetic Particle Testing with neat sketch	[8]
	mpt a question write (a) (b) (c) (d) (e) (a) (b) (a) (b) (c) (d) (c) (d) (d) (d) (d) (d) (d) (d) (d) (d) (d	<ul> <li>(b) Allotropic form of iron</li> <li>(c) Critical Resolved Shear Stress (C.R.S.S.)</li> <li>(d) Ductile to Brittle Transition Temperature (DBTT)</li> <li>(e) Normalizing</li> <li>(a) Classify various types crystal defects? Discuss line defects and their types.</li> <li>(b) State and explain Griffith's theory for brittle material with derivation</li> <li>(a) Draw the iron -iron carbide equilibrium diagram and write the important transformation seen in the diagram.</li> <li>(b) What is Nitriding and explain types of nitriding processes. Explain the heat treatment before nitriding.</li> <li>(a) What is recrystallization annealing? Discuss the various stages of recrystallization annealing with neat sketch</li> <li>(b) Define fatigue failure. Discuss fatigue testing, Explain interpretation of S-N curve for ferrous and non –ferrous metals.</li> <li>(a) Draw a binary alloy phase diagram with example.</li> <li>(b) Write note on Shape Memory alloys</li> <li>(c) Explain ceramics and its applications.</li> </ul>

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