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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSIT

Fourth Semester B.Tech Degree (S,FE) Examination August 2021 (2015 Scheme

Course Code: ME210

Ma	x. M	arks: 100 Duration: 3	Hours
PART A			
1		Answer any three questions, each carries 10 marks. What is the need of coordination number and radius ratio? Obtain packing	Marks (10)
*		factor for FCC structure.	
2	a)	Define Petch theory.	(4)
	b)	What is the significance of high and low angle grain boundaries on dislocation?	(6)
3		With a neat sketch, illustrate Burgers circuit forscrew dislocations.	(10)
4	a)	Differentiate between slip and twinning.	(5)
	b)	Describe in detail about plastic deformation of metals.	(5)
PART B			
5		Answer any three questions, each carries 10 marks. What are the classifications of cast iron? Differentiate grey and white cast iron.	(10)
6		How can we enhance the properties of steel by adding alloying elements?	(10)
7		Explain in detail about the factors affecting hardenability	(10)
8	a)	Define Gibb's phase rule.	(5)
)	b)	Clarify surface hardening method?	(5)
PART C			
9	a)	Answer any four questions, each carries 10 marks. What are the characteristics of fatigue failure?	(5)
	b)	Demonstrate how can we determine fatigue in materials	(5)
10	a)	Investigate the mechanism of creen deformation	(6)
10	a) b)	Illustrate creen curves with neat diagram	(0)
11	0)	Cive a detailed description shout the factors leading to erack propagation	(10)
11		The interview of the second the factors leading to crack propagation	(10)
12		Elucidate in detail about shape memory alloys? How it achieves the effect?	(10)
13		Explain the structural changes during Ductile and Brittle transition temperature	(10)
14		What are the characteristics of metal matrix composites? List out the applications of MMC?	(10)