C 31821

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FOURTH SEMESTER B.TECH. (ENGINEERING) DECREE EXAMINATION JUNE 2007

Name... Reg. No

ME/AM 04 404-METALLURGY AND MATERIAL SCIENCE

[2004 admissions]

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

I. (i) What are the three major groups of engineering materials ? Briefly explain each group with suitable examples.

		(5 marks)
(ii)	Discuss Bragg law with an illustration.	(5 marks)
(iii)	Define "dislocation". With neat sketch explain edge type of dislocation.	(5 marks)
(iv)	Explain how S-N curve is constructed experimentally.	(5 marks)
(v)	Neatly draw binary isomorphous phase diagram and discuss.	(5 marks)
(vi)	Explain significance of annealing with an example.	(5 marks)
(vii)	Discuss functions of alloying elements in steel.	(5 marks)
(viii)	What are the properties of pure copper ? Name important copper alloys and ind application.	icate țheir
et i a j		(5 marks)
II. (A)	(i) Give an account on microstructures, macrostructures and crystal structures illustrations.	with
		(10 marks)
	(ii) Write short notes on polymorphism and allotropy.	(5 marks)
	Or	
(B)	(i) Prove that FCC is closely packed than BCC by calculating atomic packing fa	ctor for both.
		(10 marks)
	(ii) Differentiate between metallurgical microscope and electronic microscope.	(5 marks)
III. (A)	(i) Discuss deformation of crystals with reference to slip and twinning.	(8 marks)
	(ii) Draw the creep curve and explain various stages of it.	(7 marks)
	Or	
(B)	(i) Give an account on brittle and ductile fractures with examples.	(8 marks)
	(ii) Discuss recovery and recrystallization.	(7 marks)

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	(i) Define "solid solution". Name different types of solid solutions and briefly explain each one of them with examples.			
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	(ii) Write short notes on austempering.	(5 marks)		
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(B)	(i) Draw the iron-iron carbide diagram and label.	(7 marks)		
and as to the	(ii) Neatly draw the T-T-T curve for eutectoi nd steel and explain.	(8 marks)		
V. (A)	What are the characteristics of stainless steels ? Name different types of stainless briefly explain each one of them.	s steels and		
	and and the second s	(15 marks)		
	Or			
(B)	What are composites ? Name different types of composites and briefly explain e	ach one of		
in leafistic Circ	them with suitable examples.			
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