B.Tech. Fourth Semester (Food, Pulp & Paper, Oil & Paint & Petro Chem.) (CGS)

11012: Material Technology - I: 4 CT 04

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Time: Three Hours		e Hours	Max. Mark	Max. Marks: 80	
	Notes	3: 1. 2. 3. 4. 5. 6. 7. 8. 9.	All question carry marks as indicated. Answer three question from Section A and three question from Section B. Due credit will be given to neatness and adequate dimensions. Assume suitable data wherever necessary. Diagrams and chemical equations should be given wherever necessary. Illustrate your answer necessary with the help of neat sketches. Discuss the reaction, mechanism wherever necessary. Use of cell phone is not allowed in exam. Use of pen Blue/Black ink/refill only for writing the answer book.		
			SECTION – A		
1.	a)	What ar	e the various line defects occur in crystals? Explain in detail.	6	
	b)		you mean by structure sensitive and structure insensitive properties? Discuss giving suitable example.	7	
			OR		
2.	a)	Define (are calc	Co-ordinate number. Explain how does the Co-ordinate number of BCC and FCC alated?	7	
	b)	•	the followings. it cell. ii) Space Lattice.	6	
3.		extent ti properti	mechanical properties are changed due to change in temperature and upto what hese properties are changing? Give all detailed effects of changing mechanical es in service conditions. What preventive measures are to be taken to avoid the temperature on materials.		
			OR		
4.	a)		you mean by Recovery Grain Growth and Recrystalline involved in the process ag cold worked metals?	7	
,		i) Str	the effect of high temperature on metal for the following properties:- ength. ii) Ductility. stic Deformation.	7	
5.	a)	Explain	eutectic reaction. Write down the reaction and draw a neat sketch with reference	7	

to Iron carbon diagram.

b) Differentiate between :-

- White cost Iron and Grey cast Iron.
- Alloy and solid solutions.

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OR

6.	a)	Describe the solidification of pure metal occurs. Also explain the phenomenon of nucleation and growth in pure metal.	7			
	b)	Explain and draw an equilibrium diagram when two metals A and B show complete intersolubility in liquid and solid state.	6			
		SECTION – B				
7.	a)	What is the difference between Annealing and Normalizing? Explain.				
	b)	Discuss the heat treatment of Austenite stainless steel.	7			
		OR				
8.	a)	Discuss the purpose behind annealing of copper and its alloy.				
	b)	Explain the followings. i) Hardening. ii) Nitriding.	6			
9.	a)	Define the term polymers. Differentiate between Thermoplastic and Thermosetting polymers.	7			
	b)	Explain the general method of manufacturing refractory materials.	7			
		OR				
10.	a)	What are ceramic materials? Classify ceramic materials giving examples of each.	7			
	b)	Define and classify 'Composite Materials'. What are the basic features of a composite material in determining its properties?	7			
11.	a)	What are the various corrosion testing methods used in industries? Discuss any one method in detail.				
	b)	Explain the ultrasonic method of detecting internal defects in a material.	6			
		OR				
12.	a)	Explain the followings:- i) Polarization. ii) Season Cracking.	7			
	b)	Distinguish between. i) Destructive and Non-destructive testing of metals.	6			
		ii) Metallic coating and electroplating.				

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