

Con. 10950-12.**(3 Hours)****KR-7553****[Total Marks : 100****N.B.**

- (1) Question No. 1 is **COMPULSORY**.
- (2) Attempt any **FOUR** questions out of remaining.
- (3) **FIGURES** to the **RIGHT** indicate full marks.

Q.No.1	Write short notes on ;	
	a. High speed steels	05
	b. Creep resistant materials	05
	c. Dislocation jog	05
	d. Allotropic forms of iron	05
Q.No.2	a. What is recrystallization annealing? Discuss the stages and factor affecting on it?	10
	b. Define fracture. Explain brittle, ductile, creep and fatigue fracture.	10
Q.No.3	a. Draw Fe-Fe ₃ C equilibrium diagram showing important transformations. Discuss Eutectoid transformation in details.	
	b. Explain Griffith's theory of brittle fracture. What is ductile-brittle transition?	10
Q.No.4	a. Explain how to determine from the equilibrium diagram, the composition of two phases that are in equilibrium at any temperature.	10
	b. What is a peritectic reaction? Explain with example.	10
Q.No.5	a. Define a space lattice. What are its important characteristics?	10
	b. Define: ferrite, cementite, austenite, pearlite, martensite and bainite. What are their general characteristics? How they obtained?	10
Q.No.6	a. What are the chemical properties of a material? How are they measured?	10
	b. What is an S-N curve? What useful information is obtained from such curve?	10
Q.No.7	a. What are the different methods of diffusion coating? Discuss in the details with its principle & application.	10
	b. How would you improve the machinability of a low carbon, medium carbon and high carbon steel by heat treatment?	10
