

SE/IV / Material Technology / MECH / 17.12.15

Mechanical/Automobile



QP Code : 5473

(3 Hours)

[Total Marks : 100

- N. B. 1) Question No. 1 is compulsory.  
2) Attempt any three questions from remaining five questions.  
3) Figures in bracket indicate marks.  
4) Draw neat well labeled sketches.

Q. 1		Write note on any four:- a) Baushinger's effect related to fatigue of metal b) Creep Test c) Effect of Alloy on TTT diagram d) Critical resolved shear stress e) Crystal Imperfection	(5x4=20)
Q. 2	A)	What do you mean by Composite materials? Explain their properties and practical applications.	(10)
	B)	What is Fatigue? Explain fatigue testing in detail.	(10)
Q. 3	A)	Draw Fe-Fe <sub>3</sub> C Diagram and Explain cooling of 1.0 % C alloy in the Fe-Fe <sub>3</sub> C Diagram.	(10)
	B)	Explain Flame Hardening and Induction Hardening.	(10)
Q. 4	A)	Draw and explain Time Temperature Transformation (TTT) diagrams of 0.8 % C alloy.	(10)
	B)	Derive an expression for Griffith theory of brittle fracture.	(10)
Q. 5	A)	What is plastic deformation? Distinguish between slip and twin mechanism of plastic deformation.	(10)
	B)	What is case hardening? Explain carburising in detail	(10)
Q. 6		Write short note on any four a) Dislocation Jog and Kink. b) Austempering c) Bain's distortion model for martensitic transformation d) Engineering Materials e) Annealing	

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