Reg. No. : | | | | | | | | | | | |

Question Paper Code : P 1430

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Fourth Semester

Mechanical Engineering

MH 1151 — ENGINEERING MATERIALS AND METALLURGY

(Regulation 2004)

(Common to Fourth-Semester-Automobile Engineering, Production Engineering and Second Semester-Mechtronics Engineering)

(Common to B.E. (Part–Time) Third Semester Mechanical Engineering Regulation 2005)

Time : Three hours Maximum : 100 marks

Draw sketches wherever necessary.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define solid solution.
2. How are steels classified?
3. When will you prefer carbonitriding?
4. Define Hardness.
5. Name the alloying elements in High Speed Steel.
6. State the applications of tool steel.
7. Define degree of polymerization.
8. State any two properties of ceramics.
9. Define fatigue.
10. List the testing methods of metals.

PART B — (5 × 16 = 80 marks)

11.	(a)	(i)	Explain the various micro constituents' presents in steel.	(10)
		(ii)	With a neat sketch, label the reactions of iron carbon diagram.	(6)
			Or	
	(b)	(i)	Draw the Iron carbon diagram and explain in brief.	(10)
		(ii)	State the properties and applications of PLAIN CARBON steel.	(6)
12.	(a)	(i)	Explain the procedure of Jominy end quench test.	(10)
		(ii)	Distinguish between annealing and tempering.	(6)
			Or	
	(b)	(i)	Explain in detail the flame hardening and induction hardening.	(10)
		(ii)	Compare between austempering and martempering.	(6)
13.	(a)	(i)	With a neat sketch, explain precipitation hardening.	(10)
		(ii)	State the composition, properties and uses of bearing alloys.	(6)
			Or	
	(b)	(i)	Explain the effect of alloying elements in steel.	(10)
		(ii)	Discuss about the Grey cast iron.	(6)
14.	(a)	(i)	Write short notes on (1) Ceramics (2) Formaldehydes.	(10)
		(ii)	What is PMMA? Describe it in detail.	(6)
			Or	
	(b)	(i)	Explain in detail Engineering polymers.	(10)
		(ii)	State the properties and uses of reinforced composites.	(6)
15.	(a)	(i)	Explain the mechanism of plastic deformation.	(10)
		(ii)	Write a short note on Creep.	(6)
			Or	
	(b)	(i)	Describe the procedure of tensile test for metals.	(10)
		(ii)	Write short notes on Hardness testing.	(6)

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