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Question Paper Code: 42845

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Fourth Semester

Mechanical Engineering

ME 2253 – ENGINEERING MATERIALS AND METALLURGY
(Common to Automobile Engineering/Mechanical and Automation Engineering)
(Regulations 2008)

(Also common to PTME 2253 – Engineering Materials and Metallurgy for B.E. (Part-Time) Third Semester – Mechanical Engineering – Regulations 2009)

Time: Three Hours

Maximum: 100 Marks

Answer ALL questions.

PART - A

(10×2=20 Marks)

- 1. Define isomorphous.
- 2. What is Peritectic reaction?
- 3. Define Hardening.
- 4. What is hardenability?
- 5. What is twinning?
- 6. Define fracture.
- 7. What is maraging steel?
- 8. What is Cupronickel?
- 9. What is PET?
- 10. What is FR plastic?

PART - B

(5×16=80 Marks)

11.	a)	Explain in detail Eutectoid and Eutectic reactions. How do you classify steel and cast iron?	(16)
		(OR)	
	b)	Draw and explain microstructure of Carbon steel. Write the applications of steel and cast iron.	(16)
12.	a)	What is full annealing? Write in detail on hardening and tempering of steel. (OR)	(16)
	b)	What is hardeability? How do you conduct Jominy end quench test?	(16)
13.	a)	What is Twinning? Explain in detail of types of Fracture. How do you conduct material testing under tension, compression and shear loads?	(16)
		(OR)	
	b)	What is Fatique? How do you conduct Fracture Toughness tests? And Explain.	(16)
14.	a)	Write short notes on the following: 1) HSLA	(5)
		2) Maraging steels	(5)
		3) Effect of alloying additives in steel	(6)
		(OR)	
	b)	What is precipitation hardening? Due to heat treatment, what changes have to be happened on AI and its alloys? And Explain.	(16)
15.	a)	Write short notes on the following non ferrous materials.	
		1) PMMA	(5)
		2) ABS	(5)
		3) PPS	(6)
		(OR)	
	b)	Explain in detail of various engineering ceramics. What is PTFE?	(16)
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