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**Question Paper Code : 91644**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

Fourth Semester

Mechanical Engineering

ME 2253/ME 44/ME 1253/080120017/10122 ME 304 — ENGINEERING  
MATERIALS AND METALLURGY

(Common to Automobile Engineering, Mechanical and Automation Engineering)

(Regulation 2008/2010)

(Common to PTME 2253/10122 ME 304 — Engineering Materials and Metallurgy  
for B.E. (Part-Time) Third Semester — Mechanical Engineering — Regulation  
2009/2010)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Eutectoid.
2. What is Peritectoid reaction?
3. Define Recrystallisation.
4. What is Hardenability?
5. What is Twinning?
6. What is Charpy?
7. What is HSLA?
8. Precipitation Hardening - Define.
9. What is Polymer?
10. What is Fibre reinforced plastics?

PART B — (5 × 16 = 80 marks)

11. (a) What is Interstitial and explain? Explain in detail about Eutectic reactions.

Or

- (b) Draw Iron Carbide diagram and explain.

12. (a) Explain in detail about Spheridizing. What is tempering of Steel? Explain.

Or

- (b) What is CCR? Write difference between Normalising and Tempering.

13. (a) What is Slip? Explain in detail of Testing of materials under shear loads.

Or

- (b) Define Hardness. Explain Fatigue and Creep Tests.

14. (a) (i) What is Cupronickel? Explain its applications. (8)  
(ii) Effect of Si on steel – Discuss. (8)

Or

- (b) Write short notes on the following:

- (i) Tool steels (6)  
(ii) White malleable Iron (5)  
(iii) Bearing Alloys. (5)

15. (a) Explain in detail the following:

- (i) PET (6)  
(ii) PC (5)  
(iii) ABS. (5)

Or

- (b) Write short notes on

- (i) Phenol Formaldehydes (8)  
(ii) Applications of PMMA and PPO. (8)