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

Question Paper Code : 31564

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

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 – Engineering Materials and Metallurgy for B.E. (Part-Time) Third Semester – Mechanical Engineering – Regulation 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Eutectic Reaction.

2. How is steel classified?

3. Define the term Stress relief annealing and Spheroidizing.

4. Differentiate between Tempering and Maraging.

5. Sketch Slip and Twinning types of deformation.

6. Differentiate between Fatique and Creep tests.

7. What are the properties of steel?

8. What is precipitation hardening?

9. Brief about any two types of polymers

10. What are the applications of Poly Styrenes?

PART B — (5 × 16 = 80 marks)

11. (a) What are the properties and application of different types of Cast Iron? Explain in brief.

Or

(b) Explain with a phase diagram of Eutectoid & Peritectic reaction

12. (a) Explain the Isothermal Transformation diagram for a Eutectoid Iron-Carbon alloy with superimposed cooling curves.

Or

(b) Write a short note on :

(i) Hardenability

(ii) Nitriding

(iii) Flame hardening

(iv) Cyaniding. (4 × 4 = 16)

13. (a) Explain in brief the Testing of materials to measure Tension and Compression with a graph and an example.

Or

(b) What is hardness test & Impact test? Explain with a sketch and an example.

14. (a) What are the influences of alloying Al, Cr, Ni, Mo, Si, Mn, V and Cu in steel? Explain in brief

Or

(b) What are the properties of aluminium? And what is the effect of different types of alloying elements such as Cu, Iron, Manganese, Magnesium used with aluminium and its application? Explain.

15. (a) What are the properties and Application of PVC, PET, PP and PC? Explain.

Or

(b) Write a short note on :

(i) PTFE (4)

(ii) Phenol formaldehyde (4)

(iii) Engg Ceramics (4)

(iv) Fiber Rein forced Plastic. (4)
