

THIRD SEMESTER

Material Science and Nano Technology

Paper III — ALLOYS AND PAINTS

Time : Three hours

Maximum : 75 marks

(No additional sheet will be supplied)

PART A — (5 × 3 = 15 marks)

Answer any FIVE questions.

Each question carries 3 marks.

Each answer should not exceed 1 page.

1. What is an alloy? Give examples for alloys.
2. Write the characteristics of shape memory alloys.
3. Sketch the phase diagram of Ni-Cu system.
4. Write the limitations of phase diagrams.
5. Write a note on basic ingredients of paint.
6. Write the classification of paints based on curing mechanism.
7. Write the adhesion properties of coatings.
8. Discuss the resistance of paint to yellowing and bleeding.

PART B — (4 × 15 = 60 marks)

Answer ALL questions.

Each question carries 15 marks.

Each answer should not exceed 6 pages.

9. Write about interstitial, defect phase and electro valence compounds.

Or

10. Write the formation of Nickel-titanium shape memory alloys. Write the applications of shape memory alloys.

11. Write a note on unary phase diagrams. Explain the phase diagram of pure iron system.

Or

12. Write the uses of phase diagrams. Explain Pb-Sn phase diagrams.

13. Write the functions of primers, sealers, undercoats and top coats. Write about resin components.

Or

14. Discuss the fundamentals of coating and the factors affecting the coating properties.

15. Discuss in detail optical, barrier, ageing properties of coatings.

Or

16. Write in detail non destructive tests of paints.

