CODE NO: OR 211851 OR

2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY

II B.TECH. I SEMESTER REGULAR EXAMINATIONS

METALLURGICAL ANALYSIS

(METALLURGY & MATERIAL TECHNOLOGY)

MAY 2005

TIME: 3 HOURS
MARKS: 70

Answer any FIVE Questions
All Questions carry equal marks

1. (a) What is sampling? Explain the importance of sampling? Describe how a sample is prepared.

(b) Explain the basic principles of gravimetric and volumetric methods of analysis.

2. (a) Explain briefly how the interfacing radicals are eliminated. Give two specific examples.

(b) Distinguish between qualitative analysis and quantitative analysis.

3. (a) With the help of a neat sketch explain the principle and procedure for the estimation of carbon and sulphur in steels and cast Irons.

(b) Explain how you determine silica and Alumina in the blast furnace slag.

4. (a) Discuss in detail the qualitative analysis of Brasses and Soldess.

(b) How do you determine lime in lime stone? Explain.

5. Explain how the estimation of the following is carried out? Also give the necessary chemical equations.

(a) 'W' in alloy steels

(b) Determination of manganese by gravimetric method in Iron and steel.

6. (a) Discuss in detail various physico-chemical principles of calorimetric analysis and the equipment used.

(b) What do you mean by instrumental analysis? What are the various types of instrumental analysis used in metallurgical analysis? Explain their principles of operation in detail?

7. (a) What is Beer-Lambert's law? With a schematic diagram of optical system of a UV spectrophotometer, indicate its essential compents and explain its working principle.

(b) What is polarography? Explain how quantitative analysis of metal ions is carried out with polorography.

8. Write short notes on the following:

(a) Electro analysis

(b) Flame photometry

(c) Amperometric titration

(d) Absorptiometry.

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