

Code No: A109211803

R09**Set No. 2**

II B.Tech I Semester Examinations, November 2010

METALLURGICAL ANALYSIS

Metallurgy And Material Technology

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. Explain and Give the classification of various methods used in Metallurgical Analysis. [15]
2. (a) What are the different electrodes and samples used in spectroscopy and how they are prepared?
(b) Draw neatly the schematic diagram of a photo electric spectrometer. [15]
3. Explain the steps involved in conventional solution methods for qualitative analysis of Bauxite ore. [15]
4. Explain about the Hilger spekker Absorption meter with a neat sketch. [15]
5. What properties are improved by the addition of molybdenum and vanadium to alloy steel and how they are determined by gravimetric method or ignition method. [15]
6. Differentiate between
 - (a) Ionic mechanism and Electrode processes.
 - (b) Electrolysis process and Free radical mechanism.
 - (c) Conductometry and polarography. [15]
7. (a) What are the important non-ferrous alloys which are used in commercial applications.
(b) Explain about the analysis of lead and beryllium in bronzes. [15]
8. Explain about the following:
 - (a) Determination of reducing power of ores.
 - (b) Determination of oxidising power of ores.
 - (c) Assaying of ores. [15]

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Set No. 4

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METALLURGICAL ANALYSIS

Metallurgy And Material Technology

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. Discuss about the Electromigration in solid metals and Alloys. [15]
2. Explain the estimation of manganese dioxide by titration method from manganese ore. [15]
3. (a) Define precipitation and list out the conditions of precipitation.
(b) What are the rules of precipitation and give with example. [15]
4. Discuss the physico - chemical principles involved and equipment required in potentiometry and list out the applications of potentiometry. [15]
5. Explain in detail the estimation of molybdenum in alloy steels by Jones reductor method. [15]
6. Differentiate between the following:
(a) Persulphate - Arsenite method and chlorate or Ford and Williams method.
(b) Strohlein method and Eggertz method. [15]
7. What are the conventional solution methods? Why it is used only for analysis of ores, slags, refractories and Give their advantages and disadvantages. [15]
8. Discuss the physico - chemical principles involved and equipment required in Duplication method of colorimetry and what are its applications. [15]

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R09

Set No. 1

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METALLURGICAL ANALYSIS

Metallurgy And Material Technology

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. What are the major constituents of limestone and discuss the analysis of lime, Magnesia and silica from limestone. [15]
2. What are the advantages and disadvantages of gravimetric method which is used for Molybdenum estimation from alloy steel and explain. [15]
3. Explain the fundamental physico - chemical principles involved in Instrumental Analysis. [15]
4. (a) What is a polarograph and polarogram, explain the residual current, migration current and diffusion current.
(b) Describe the important Instrumental features of a modern atomic absorption spectrophotometer. [15]
5. Explain the methods of quantitative analysis used for estimating ores, elements and alkali metals. [15]
6. Explain in detail potassium permanganate method to determine total iron in cast irons. [15]
7. What are the important ores of silver and explain the different methods used for estimating of silver from their respective ores. [15]
8. Explain in detail about the dissolution of the ores with examples. [15]

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R09**Set No. 3**

II B.Tech I Semester Examinations, November 2010

METALLURGICAL ANALYSIS

Metallurgy And Material Technology

Time: 3 hours

Max Marks: 75

Answer any FIVE Questions
All Questions carry equal marks

1. Explain the steps involved in conventional solution methods for qualitative analysis of Iron ore. [15]
2. What are the different types of furnaces which are used for fire assaying and explain in detail about the furnaces? [15]
3. Define Metallurgical Analysis and explain the scope and importance of Metallurgical Analysis. [15]
4. (a) List out the important applications of flame photometric methods.
(b) Differentiate between standard addition method and calibration curve method. [15]
5. Explain the determination of Nickel in steels and Its Alloys by spectrophotometry and list out the advantages and disadvantages of this process. [15]
6. Write short notes on any two:
(a) Cyanide method used for nickel estimation
(b) Chromium estimation by electrolysis process
(c) Tungsten estimated by gravimetric method. [15]
7. Discuss in detail about the analysis of Bismuth and iron from solders by gravimetric and volumetric methods. [15]
8. (a) How is Spectroscopy used in the analysis of various elements in an alloy?
(b) Outline the principles involved in Potentiometric titrations.
(c) List out the different types of indicators and electrodes used in Potentiometric titrations. [15]
