BS23MD1CH1
BSC Semester- 1 (MDC)
Industrial Aspects of Chemistry

Unit 1 : Oil & Natural Gas

Petroleum, natural gas, Fractionation of crude oil, Cracking, Reforming, Hydro-forming, Isomerisation petrochemicals. Coal – Structure and properties, Analysis of coal, Carbonization process, Manufacture of coke and coal gas, Distillation of coal tar, Chemicals derived there from.

Unit 2 : Renewable Energy

Renewable natural resources, cellulose and starch – their properties and uses, Important chemicals derived from cellulose and starch, Alcohol and alcohol-based chemicals. Inorganic materials of Industrial aspects – Importance, their availability, forms, structure and modification, Alumina, Silica, Silicates, Clay, Mica, Carbon and Zeolites.

Unit 3 Metallurgy

Basic metallurgical operations-Calcinations, Roasting, Sintering, Refining, Furnace Secondary metals, Alloys Physiochemical principles in extraction of Iron, Copper, Aluminium, Nickel, Magnesium, Lead and Silver. Heat treatment operations.

References

1. Extractive metallurgy, Joseph & Newton.
2. A textbook of material science & metallurgy, O.P.Khanna.
3. Chemistry of Engineering Materials. C.V.Agarawal.
4. Introduction to Petroleum Chemicals, H.Steiner, Cotton – Cellulose: Its chemistry & technology, Hall A.G.
5. Chemistry in engineering and technology, Volume I & II, J.C. Kuricose& J. Rajaram. (Tata McGraw Hill).
6. A Textbook of chemical technology, Volume I & II, G.N. Pandey. (Vikas Publishing House).
7. Engineering Chemistry, Jain & Jain., 17. Chemistry of Engineering materials, C.V. Agarwal.
8 Shreve's Chemical Process Industries, George A. Austin (McGraw Hill Co).
9 Materials for engineering, Edition 3, John Martin, Woodhad Publishing in materials

BSC Semester- 1 (MDC) practical

Chemistry Practical -

Inorganic Qualitative Analysis (Inorganic Salts / Two Radicals) (Minimum 08 Salts)

Water Soluble and Insoluble Inorganic salts of following
Cations and Anions**: (**All PO_4^{-3} Soluble)

Cations: Na^{+}, K^{+}, NH_4^{+}, Mg^{+2}. Ba^{+2}, Ca^{+2}, Sr^{+2}, Fe^{+2}, Fe^{+3}, Al^{+3}, Cr^{+3}, Zn^{+2}, Mn^{+2}, Co^{+2}, Pb^{+2}, Cu^{+2}

Anions: S^{-2}, SO_4^{-2}, CO_3^{-2}, PO_4^{-3}, CrO_4^{-2}, NO_3^{-2}, Cl^{-1}, Br^{1}, I^{-1}, O_2-2

Reference Books (Practical)

1. *'Vogel's Textbook of Macro and Semi Micro Qualitative Inorganic Analysis'*, Orient Longman Ltd. 5th Ed.
2. *'Vogel's Textbook of Quantitative Chemical analysis'* Revised by G. H. Jeffery, J. Bassett, J. Mendham & R. C. Denney, ELBS (English Language Book Society) Longman. 5th Ed.
3. *'Analytical Chemistry'* by Dhruba Charan Dash, PHI Learning Private Ltd, New Delhi, 2011.
4. *'Analytical Chemistry'* by Gary D. Christian, 4th Ed., John Wiley & Sons.
5. *'Advanced Practical Inorganic Chemistry'* by Gurdeep Raj, Goel Publishing House, Meerut,9th Ed.