SARDAR PATEL UNIVERSITY
B.Sc. FIRST SEMESTER
Core Course – Industrial Chemistry (Voc.)
US01CICV21 (T) Industrial Aspects of Chemistry
Effective from June 2018
4 Credits, 4 periods per week
Total Marks 100, Internal -30 Marks, External-70 Marks, Exam duration: 3 hours

UNIT – I : Raw materials for organic compounds – Petroleum, natural gas, Fractionation of crude oil. Cracking, Reforming, Hydroforming, 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 – II : 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-III: 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.

Unit-IV: Engineering materials, their need and classification, Selection of material of construction. Metals and alloys-Important metals and alloys, Iron, copper, aluminium, Lead, Nickel, Titanium and their alloys.

Cement-Its composition and types, manufacturing process, setting of cement. Ceramics-Introduction, types, manufacturing process, applications. Refractories, Glass-types, composition, manufacture, properties and applications.

BOOKS:

1. Extractive metallurgy, Joseph & Newton
2. A textbook of material science & metallurgy, O.P.Khanna
3. Chemistry of Engineering Materials. C.V.Agarawal
4. Non-ferrous production metallurgy
5. Material Science. Narang.
6. Introduction to Petroleum Chemicals. H.Steiner.
7. Cotton – Cellulose: Its chemistry & technology, Hall A.G.
8. Cellulose, Whistler R.L.
9. Chemistry of cellulose. Henser. B.
10. Chemistry and Industry of starch, Kerr R.M.
11. Modified Starches - Properties and uses. Wurzburg O.B.
12. Clays. P. Rier (John Wiley & sons)
13. Chemistry in engineering and technology, Volume I & II, J.C. Kuricose & J. Rajaram. (Tata McGraw Hill)
14. Shreve's Chemical Process Industries, George A. Austin (McGraw Hill Co).
15. A Textbook of chemical technology, Volume I & II, G.N. Pandey. (Vikas Publishing House)
16. Engineering Chemistry, Jain & Jain.
17. Chemistry of Engineering materials, C.V. Agarwal.