

VEER NARMAD SOUTH GUJARAT UNIVERSITY
Third Year B. Sc. Semester -V
General elective subject (Petrochemicals)
Proposed syllabus from June 2021

50 Marks (External)
20 Marks (Internal)

Total: 30 Hrs
Time: 2 Hrs. (Uni. Exam)

UNIT – I

Topic-1: Source of Petrochemicals: 4 Hrs

(a) Natural gas: Composition, Natural gas as Petrochemical feed stock.

(a) Crude oil: Composition, Distillation and Refining, Utilization of various fractions (oil product)

Topic-2: Classification of Petrochemicals: 6 Hrs

First, Second and Third generation petrochemicals.

Conversion process: Cracking reforming, Isomerisation, Hydrogenation, Alkylation and Hydrodealkylation, Dehydrocyclisation of petroleum products, Polymerization of gaseous hydrocarbons.

UNIT – II

Topic-1: 5 Hrs

Petrochemicals obtained from **C1** cut of petroleum manufacture and application of Methanol, Synthesis gas, Ammonia, HCN, Formaldehyde, Hexamethylene tetramine, Chlorinated methanes, Perchloro ethylene.

Topic-2: 5 Hrs

Synthesis and uses of H-acid, J-acid, Neville Winther's acid, DASDA, Procion Red dye, Cellitone scarlet-B, Indanthrene Khakhi GG, Blankophor B, Sulphamylon, Chloramphenicol

UNIT – III

Topic-1: 7 Hrs

Petrochemicals obtained from **C2** cut of petroleum [Ethylene and Acetylene]

Manufacture and industrial applications of chemicals obtained from Ethylene: Ethanol, Acetaldehyde (Wacker-Chemie process), Ethylene Oxide, Ethylene Glycol, Ethanolamines, Acrylonitrile, Styrene, Vinyl acetate. Manufacture and industrial applications of chemicals obtained from Acetylene, Acrylic acid, Acrylonitrile, Vinylchloride, Vinylacetate, Acetaldehyde, Chloroprene, Trichloethylene, Methyl vinyl ether.

Topic-2: 3 Hrs

Industrial Fuels: Natural fuels, Synthetic fuels, Hydrogen- Fuel of tomorrow, Fuel for rocket (Hydrazine)

Reference Books:

- (1) Introduction to petrochemicals by Sukumar Maiti oxford and IBH pubs co. New Delhi.
- (2) A text on petrochemicals by Dr. B. K. Bhaskar Rao, Khanna pubs. New Delhi.
- (3) Chemicals from petroleum by A. L. Wadams (ELBS and John Murray London)
- (4) Petrochemicals by S. L. Venkatewarn (Colour pubs. Pvt. Ltd. Bombay)



- (5) Petrochemicals digest by MGK Manon (Asia Publishing house Bombay)
- (6) Hand book of industrial chemicals Vol-I by K. M. Shah (Multi tech publishing co. 15 Yogesh, Hingwala lane, Ghatkoper (E) Bombay-400077)
- (7) Industrial chemistry including chemical engineering by B. K. Sharma, Goel pubs house, Meerut.
- (8) Hand Book of Synthetic Dyes and Pigments (Vol. II) By K. M. Shah, Multi-tech Publishing Co.
- (9) Synthetic dyes by G. R. Chatwal, Himalaya Publishers.
- (10) Synthetic Drugs by G. R. Chatwal, Himalaya Publishers.

