7th Semester	RPP7D001	Petroleum Refinery Engineering	L-T-P 3-0-0	3Credits

Module I: **(8hrs)**

Origin and formation of petroleum, reserves and deposits of the world, Indian petroleumindustries, composition of petroleum.Crude pre-treatment: dehydration and desalting. Pipestill heater, atmospheric and vacuum distillation of crude oil.

Important products, properties, and test methods: natural gas, associated gas, dissolvedgas, refinery off gas, LPG, Reid vapour pressure, ASTM distillation, octane and cetanenumbers.

Module II: **(7 hrs)**

Treatment of products, additives, blending of gasoline. Treatment of gasoline, kerosene,lubes and lubricating oils, waxes.

Module III: **(7 hrs)**

Thermal and catalytic cracking, hydro cracking and hydro treating,Coking, visbreaking, alkylation, isomerization, asphalt, and air blown asphalt.

Module IV: **(7 hrs)**

Desulfurization and hydro-desulfurisationof petroleum products, Sweetening Processes,Desulphurisation of sour water, sulphur recovery.

Module-V: **(7 hrs)**

Biofuel, gas to liquid technology, carbon footprints in petroleum refining, concept of Petrochemical refinery, gasrefinery and Biorefinery.

Reference Books:

1. Petroleum Refinery Engineering, W L Nelson, McGraw-Hill.

2. Modern Petroleum Refining Processes, 5th ed. by B K B Rao, Oxford & IBH.

3. Petroleum Refining: Technology and Economics, 5th ed. by J H Gary, G E Handwerk,and M J Kaiser, CRC Press.

4. Handbook of Petroleum Processing, 2nd ed. by S A Treese, P R Pujado, and D S JJones, Springer.

5. Modern Petroleum technology, Hobson,G.D, Volume I &IIWiley.

Web Learning references:

1. Petroleum Refinery Engineering by Prof. K. K. Pant, Department of Chemical Engineering, IIT Delhi (https://nptel.ac.in/courses/103/102/103102022/)