

MODULE- 9

Environmental issues and new trends in petroleum refinery operations

Q1: What is Flash pyrolysis?

A1: Flash pyrolysis is the fast thermal decomposition of biomass in the absence of oxygen. The results of this pyrolysis are: gases, biofuels and char. It takes place at high temperature between 700-1000 °C and residence time in the reactor is below 1 second.

Q2: What is the permissible limits of pollutants in discharged water?

A2: Parameters	public sewer	irrigation water	surface water
Oil and grease(ppm)	20	20	10
BOD (ppm)	350	100	30
COD(ppm)	250	250	250
Phenol, (ppm)	5	5	1
Hg (ppm)	1.0	1.0	0.01

Q3: Name the process used for oxidation of sulphur? Along with the overall reaction.

A3: Claus process :- H₂S oxidation process)



Q4: Describe how presence of mercaptans can affect petroleum products?

A4: Alkyl & aromatic mercaptanes :- Important S compounds distributed in petroleum products. Cause foul odour oxidative deterioration towards metals. Also mercaptans cause oxidation deterioration as well as inhibit the performance of various additives (TEL, antioxidants) in finished products. Removal of is essential (sweetening process).

Q5: Describe mercaptans removal Process?

A5: (1) Caustic scrubbing, merox extraction. (2) Conversion of mercaptans to disulfide include doctor sweetening, merox sweetening, copper chloride sweetening. (3) Acid treating, clay treating, catalytic process.

Q6: What are sources of waste water generated from refinery?

A6: (1) Cooling Towers. (2) Boiler Feed water treatment units. (3) Process Units. (4) Desalter brine. (5) Tank Farms. (6) Chemical waste. (7) Sanitary and miscellaneous use (7) Fire protection