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 :- $\text{H}_2\text{S}$ oxidation process

Overall reaction $\text{H}_2\text{S} + \frac{1}{2}\text{O}_2 \rightarrow \text{S} + \text{H}_2$
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 determination towards metals. Also mercaptans cause oxidation determination 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) Convation of mercaptous to disulfide include doctor sweetenies , merox sweetening , copper chloride sweetening. (3) Acid treating, clay treating, catalytic process.

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