



Model Answer

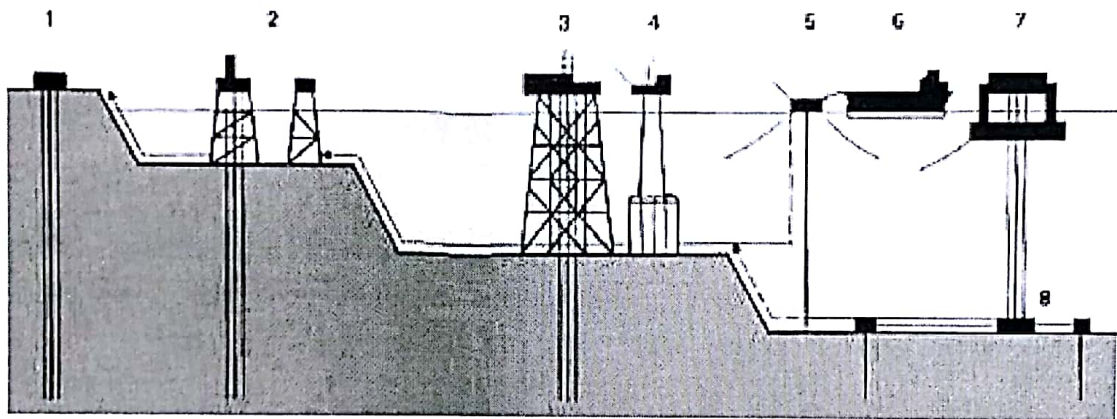
Question No. 1

[12 degree]

a) Draw the oil and gas production facilities?

[4 degree]

1. Onshore well
2. Offshore, fixed, multi platforms
3. Offshore, fixed, self-contained platforms
4. Offshore, self-contained, concrete gravity platforms
5. Offshore, floating, single-point mooring
6. Storage/shuttle tanker
7. Offshore, floating, tension leg platforms
8. Subsea manifolds



b) What's mean by upstream , midstream, Refining and petrochemicals? [4 degree]

The oil and gas industry facilities and systems are broadly defined, according to their use in the oil and gas industry production stream:

Exploration Includes prospecting, seismic and drilling activities that take place before the development of a field is finally decided.

Upstream Typically refers to all facilities for production and stabilization of oil and gas. The reservoir and drilling community often uses upstream for the wellhead, well, completion and reservoir only, and downstream of the wellhead as production or processing. Exploration and upstream/production together is referred to as E&P.

Midstream Broadly defined as gas treatment, LNG production and regasification plants, and oil and gas pipeline systems.



Refining Where oil and condensates are processed into marketable products with defined specifications such as gasoline, diesel or feedstock for the petrochemical industry. Refinery offsites such as tank storage and distribution terminals are included in this segment, or may be part of a separate distributions operation.

Petrochemical These products are chemical products where the main feedstock is hydrocarbons. Examples are plastics, fertilizer and a wide range of industrial chemicals.

c) Finger print

[4degree]

"Fingerprinting" oil is a process that refers to analytical chemistry techniques by which crude oil is defined into its components in such a way as to permit the identification of a particular sample of crude oil by the uniqueness of its composition.

Originally, star diagrams graphically depicting the relative quantities of specific aromatic compounds were used as oil fingerprints. Within one compartment of an oil field, star diagrams were usually identical since the oil composition is completely homogenized.

Purpose

The process of "fingerprinting" oil was developed to assist oil companies identify the source reservoirs from which oil is taken. When a new well intersects oil, for example, it is useful to know whether this is a new source of oil or the extension of a previously discovered source. In this manner the extent of a reservoir can be mapped and the size of the estimated.

The process came into further use in the economic exploitation of reservoirs by facilitating the commingling of oil from more than one reservoir through a common well. In such instances, reservoirs lie on top of each other and hence one well can pass through multiple reservoirs. Prior to the development of oil fingerprinting technology commingling of oil through a common well was not



feasible, thus entailing a new well for each reservoir. Fingerprinting technology allows the oil from multiple wells to be commingled and the respective contributions identified by source and proportion.

The economic savings available through wells designed for commingling could be as much as US\$1 million US\$ per well less expensive than conventional wells.¹ Fingerprinting Technology also provides information on the history of a particular crude oil accumulation and its original source. This information can be used to inform exploration came from and this information can increase the chances of exploration success.

Question No. 2

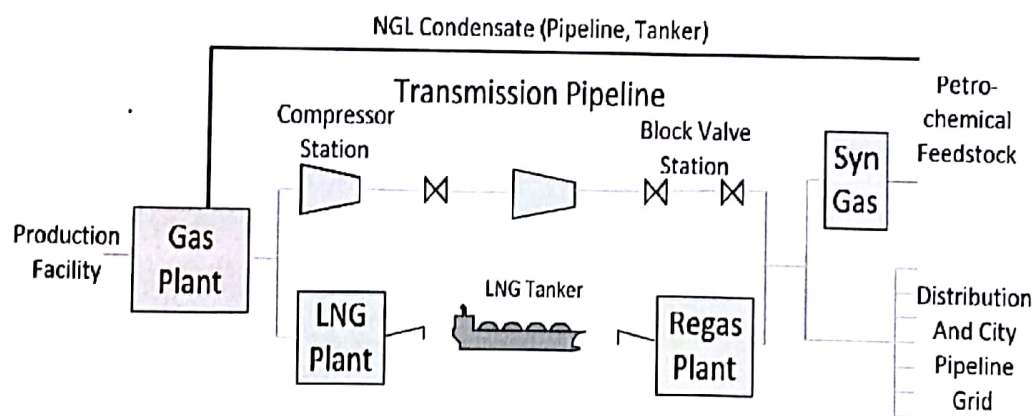
[8 degree]

a) Draw the midstream facilities

[4 degree]

Midstream

The midstream part of the value chain is often defined as gas plants, LNG production and regasification, and oil and gas pipeline transport systems.

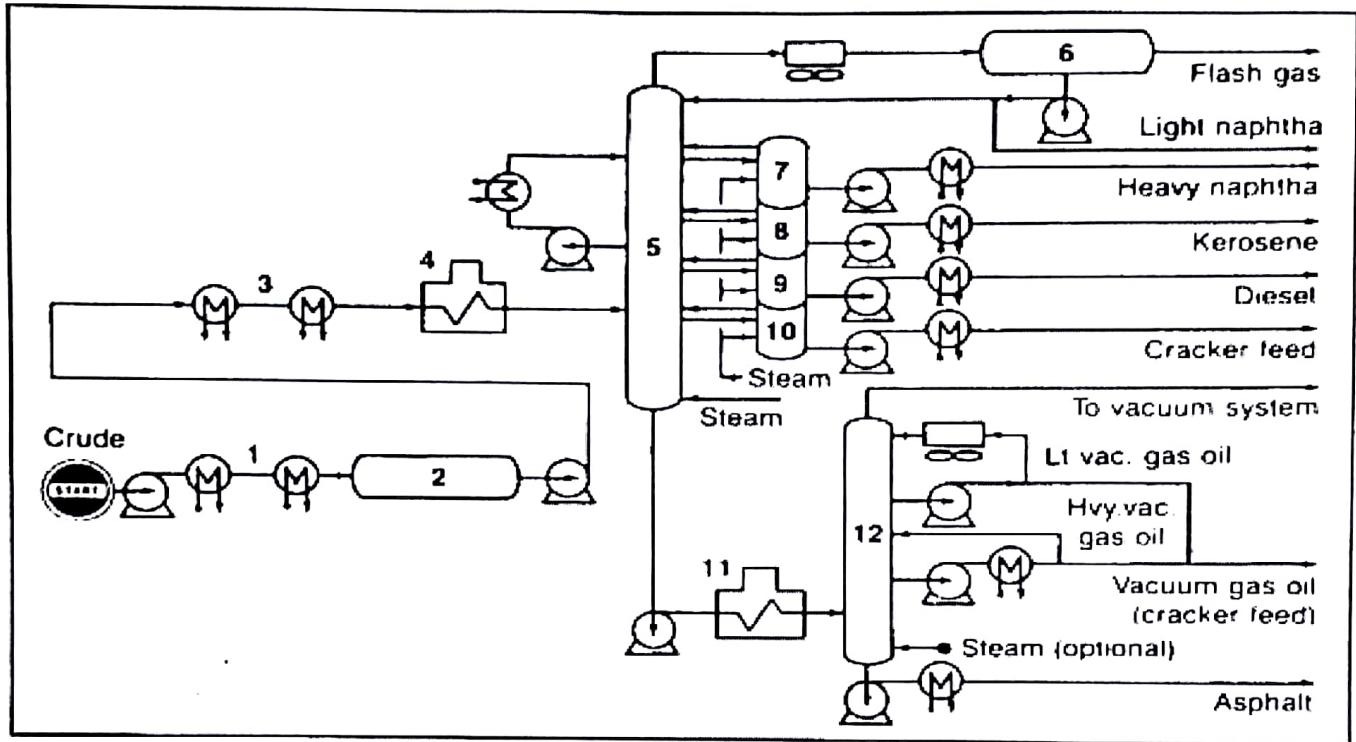


. Midstream facilities



b) Draw flow diagram of atmospheric and vacuum distillation units?

[4 degree]



Flow diagram of atmospheric and vacuum distillation units: 1 (1,3) heat exchangers; (2) desalter, (3,4) heater; (5) distillation column, (6) overhead condenser, (7–10) pump around streams, (11) vacuum distillation heater; (12) vacuum tower.