

King Saud University

Petroleum and Natural Gas Engineering

PGE 362: **Properties of Reservoir Fluids**

Posted: **Tuesday, November 10, 2015**

Due: **Sunday, November 22, 2015**

Homework three

Q1

Plot vapor pressure of pentane as a function of temperature from 60° to 200° F. Plot log vapor pressure versus $1/T$ over the same temperature range.

Q2

20 liters of dry air is passed through a pure liquid hydrocarbon (MW = 144) at 20° C. The loss in weight of the liquid was 1.310 grams. What is the vapor pressure at this temperature? If the atmospheric pressure is 750 mm, calculate a more accurate vapor pressure.

Q3

The heat of vaporization of ether (MW = 46) is 88.4 calories per gram at its normal boiling point (34.5° C). Calculate the vapor pressure at 60° C. At what temperature is the vapor pressure equal to 280 mm?

Q4

The vapor pressure of a pure hydrocarbon is 6.36 psia at -75° F. If the heat of vaporization is 8450 Btu per pound-mole, what is the vapor pressure at 40° F?

Q5

A hydrocarbon has the following vapor pressures

Temperature	Vapor Pressure
—75° F	6.36 psia
—50° F	12.60 psia
—25° F	22.70 psia

Calculate graphically by plotting logarithm of the vapor pressure versus $1/T$;
(a) Vapor pressure at 40° F. ; (b) Boiling point at one standard atmosphere pressure; (c) The gage storage pressure required to prevent loss by evaporation at 0° F.