

Q1) 1) What is the Advantages of Gas Lift ? (4Marks)

2) Injection gas pressure at surface, $P_{cwh} = 980$ psig

Gas Sp.gr (COND.) = 0.7

Depth gas Injection @ 8000 ft

Gas Temperature at surface, $T_{surf} = 80^\circ F$

Gas Temperature at depth, $T_f = 140^\circ F$

Using Trial and Error, Calculate the pressure at the injection point (P_{depth})??

(7Marks)

Q2) 1) When this criterion is not met, natural flow ends and the well.....(3 mark)

2) Oil well Produced @ 8000 ft ; Gas volume = 4400 scf

Tubing Size = 1.995 in ; API = 33 S=7%

Dome Pressure = 900 Psi ; $P_{wh} = 100$ Psi

Separator Pressure = 100 Psi ; R = 0.15

Tubing volume = 0.0039 bbl/ft ;

Compare between Horner and Brown Method's ?

Calculate a) Flow Rate (Q_{oil}).

b) GOR Required.

c) Total Volume of Gas per Day.

(9 Marks)

Q3) 1) When ESP's Are Used ? (3 mark)

2) At the best Efficiency Point on curve When the pump produces a THD (total dynamic head) of 6000 ft. Gravity of the produced fluid 40°API. Calculate the Number of stages and total Pump Horse Power.

(10 Marks)

Q4) Given : PCH= 600 Psi D = 8000 ft $P'_e = 3567$ Psi
 $Q_o = 100$ STB/DAY J = 0.3 STB/day/Psi dt = 2"
Pth = 0 Gs = 0.50 Psi/ft Gf = 0.04 Psi/ft
Aa/At = 2.6 St = 100 Psi Av/Ab = 0.11

Bottom valve to be set at 4450 ft

Valve opening Pressure = 550 , 525 , 500 , 475 , 450 , Psi , at 60°F

Calculate: 1) Depth for each Valve.

2) Pressure at each valve depth.

$$P_{depth} = P_{surface} (1 + Dv/40000) , \text{Psi}$$

(10 Marks)

Q5) I) What is the Advantage and Dis-advantage of sucker rod pump (4 Marks)

III) A well is equipped with a (1.76) in², plunger. the total pump displacement 288 bbl/day and the effective plunger stroke length is 55 in.

a) What is Pump Speed (SPM) ?

(5 Marks)

b) IF $E_v = 0.54$, and $\beta_o = 1.0$ BBL/STB, Calculate the Production rate

@surface?

(5 Marks)