PRACTICE 4

1. Calculate, for what period of time will the average formation pressure reduce from 12 to 10 MPa in the deposit being developed under solution gas drive, if a change of oils saturation declined from 0.85 to 0.7. The flowrate is constant and equals 15 m³/day. Under oil saturation 0.85- the volume formation factor is 1.4; under oil saturation 0,7 - the volume formation factor is 1.3. The radius drainage boundary is 220 m, the thickness **o f t h e** layer 10 m, porosity 12%. What oil recovery factor can be achieved while?

P_1=12 MPa

P_2=10 MPa

s_1=0.85

s_2=0.7

Q=15 m³/day

b_1=1.4

b_2=1.3

R_d=220 m

h=10m

m=12%=0.12

$$T = \frac{\Omega}{Q} \cdot (\frac{s_1}{b_1} - \frac{s_2}{b_2}) = \frac{182371.2}{15} \cdot (\frac{0.85}{1.4} - \frac{0.7}{1.3}) = 835.033 \, \text{day}$$

$$\Omega = \pi \cdot R_d^{\,2} \cdot h \cdot m = 3.14 \cdot 220^2 \cdot 10 \cdot 0.12 = 182371.2 \, \text{m}^3$$

$$\eta = 1 - \frac{s_2 \cdot b_1}{s_1 \cdot b_2} = 1 - \frac{0.7 \cdot 1.4}{0.85 \cdot 1.3} = 0.11 = 11\%$$