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Permeability (md)8050302010Calculate the average permeability of the reservoir by assuming it to be a Linear flow	701			
Calculate the average permeability of the reservoir by assuming it to be a Linear flow	C O1			
system				
Q 7 Explain with a neat diagram the constant-composition expansion test to characterize the reservoir fluids.	C O 3			
Demonstrate on various flow regimes that describe the fluid flow behavior and reservoir				
Q 8 pressure distribution in a porous reservoir. 10	C O 4			
A gas field extending over an area of 160 acres with an initial reservoir pressure, of 3250				
psia, porosity of 22% and an average initial water saturation of 23% has been producing				
from a net productive thickness of 40 ft till the reservoir reached the gas saturation of 34%				
after water invasion. The gas formation volume factor is 0.00533 ft ³ /SCF 0.00667, ft ³ /SCF				
Q9 and 0.03623 ft ³ /SCF at initial, 2500 psia and 500 psia reservoir pressures respectively. 10	C O 5			
Calculate				
Initial gas in place				
i. Gas in place after volumetric depletion to 2500 psiaii. Gas in place after volumetric depletion to 500 psia				
iii. Gas in place after water invasion at 3250 psia				
SECTION-C (2*20=40M)				
i. Derive an expression for radial flow rate Q of compressible gas with a viscosity of μ_g ,				
flowing to a well bore of radius r_w under steady-state condition through a cylindrical				
Q10geometry formation of permeability κ_g .20ii. A core is 3 in. long and 2 cm in diameter. When the core is maintained at an upstream 20	C O 4			

	cm ³ /sec of air ($\mu = 0.018$ cp) was recorded at downstream pressure. Calculate the		
	permeability of the core in darcys.		
	From the following equations for		
Q11	change in oil volume given by NB_{oi} - (N- N_P) B_o ,		
	change in free gas volume given by $\operatorname{Nm} B_{oi} \left(1 - \frac{B_g}{B_{gi}}\right) - \operatorname{N} R_{soi} B_g + N_p R_p B_g +$		
	$NR_{so}B_g - N_pR_{so}B_g$	20	
	change in water & rock volumes given by $-W_e + B_w W_p - NB_{oi}(1 + M_b)$		
	$m)\frac{(C_w S w_i + C_f)}{1 - S W_i}(\Delta P)$		CO6
	deduce for the following General Material Balance equation.		000
	$\frac{N(B_t - B_{ti})}{N_p[B_t + B_g(R_p - R_{soi})]} + \frac{\frac{NmB_{io}}{B_{gi}}(B_g - B_{gi})}{N_p[B_t + B_g(R_p - R_{soi})]}$		
	$\overline{N_p[B_t + B_g(R_p - R_{soi})]}^+ \overline{N_p[B_t + B_g(R_p - R_{soi})]}$		
	$+\frac{NB_{oi}(1+m)\left(\frac{C_{w}Sw_{i}+C_{f}}{1-SW_{i}}\right)\Delta P}{N_{p}[B_{t}+B_{g}(R_{p}-R_{soi})]}+\frac{W_{e}-B_{w}W_{p}}{N_{p}[B_{t}+B_{g}(R_{p}-R_{soi})]}=1$		
	$N_p[B_t + B_g(R_p - R_{soi})] \qquad N_p[B_t + B_g(R_p - R_{soi})] = 1$		