Reg. No.

MANIPAL INSTITUTE OF TECHNOLOGY

(A constituent unit of MAHE, Manipal)

VI SEMESTER B.TECH. END SEMESTER EXAMINATIONS APR 2019

SUBJECT (PE-II): OIL & GAS RESERVOIR ENGINEERING [CHE 4002]

REVISED CREDIT SYSTEM

(30/04/2019)

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Time: 3 Hours
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MAX. MARKS: 50



30	The Dig Dutte fic	ld is a se	mhina	tion driv	in rocor	voir Tho	curron	t rocor	voir pro		c 2500	
57.	The big butte field is a combination-drive reservoir. The current reservoir pressure is 2500											
	psia. Volume of bulk oil zone is 100,000 ac-ft and that of gas zone is 20,000 ac-ft. The reservoir											
	production data and PVT information are given below:											
	Pressure, B _o , R _s , N _P , G _P , B _g , B _w , W _e , W _D , C											
		psia	rb/stb	scf/stb	MMstb	MMMscf	rb/scf	rb/stb	MMrb	MMrb	C _f , C _w	
	Initial Conditions	3000	1.35	600	0	0	.0011	1	0	0	0	
	Current Conditions	2500	1.33	500	5	5.5	.0015	1	3	0.2	0	
	Calculate the initial oil in place.											6
3B.	What are investigates that usually carried out for each reservoir drive mechanisms?											
4A.	Derive the expression for productivity index of a reservoir in field units for radial steady state											
	inflow conditions.											7
4B.	Explain the ways to increase the Productivity Index in detail.											
5A.	A homogeneous formation in a reservoir has an average effective permeability k_{a} . The											3
	offective normospility out to a radius r. from the well has been demaged as that its success											
	effective permeability out to a radius r_a from the well has been damaged so that its average											
	value in this region is k_a and r_w is the wellbore radius. Assume that for $r_w \le r \le r_e$ the flow can											
	be described under semi steady state conditions. Derive a correlation for skin factor, S.											
5B.	During drilling, a well is damaged out to a radius of 4 ft from the well bore, ra so that the											
	permeability within the damaged zone, k_a is reduced to 1/100th of the undamaged effective											
	permeability, $k_{e}.$ After completion, the well is stimulated so that the permeability out to a											
	distance of 10 ft from the wellbore is increased to ten times the undamaged permeability.											
	What will be the PI ratio increase if the wellbore radius, r_w is 0.333 ft and the drainage radius,											
	r_e is 660 ft? Use the correlation of skin factor derived in 5A.											_
												5

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