UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, May 2018

Course: Production Engineering & Well Testing & Analysis

Semester: 2nd

Program: M. Tech Petroleum Engineering

Time: 03 hrs. Max. Marks: 100

No. of Pages: 3

Instructions:

1. Neat diagrams must be drawn wherever necessary.

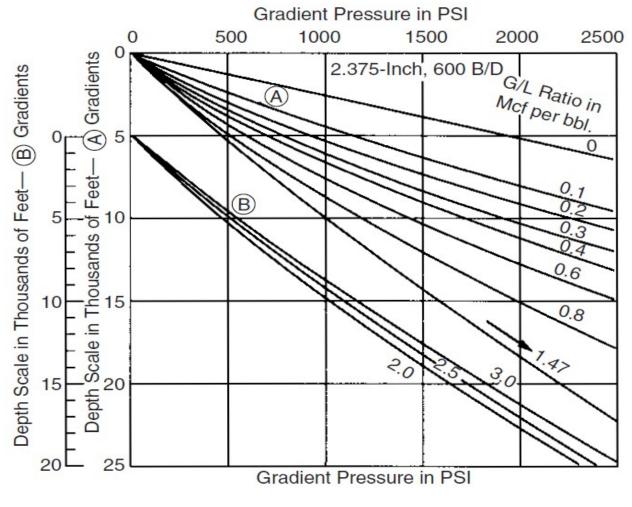
2. Use a non-programmable calculator

3. Assume suitable data, if necessary and clearly state it.

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S. No.		Marks	CO
Q 1	A sucker rod pump unit is designated by C-228D-200-74. What does 'C';'228'; 'D'; '200' & '74' represents here?		CO3
Q 2 Discuss possible pressure losses in a petroleum production system: -			CO1
Q 3	Explain the changes in phase behavior in the production tubing while producing oil: -		CO2
What is the Tubing Head Pressure of a well, completed with 8000 ft of 2.375 in. tubing, that is flowing at 600 bbl/day and GLR of 0.4 Mcf/bbl if the bottom of the tubing is 2200 psi? Gilbert chart is attached in the question paper.		4	CO2
Q 5	Discuss the importance of knowing the IPR of a well with necessary illustrations.	4	CO1
	SECTION B		
Q 6	Explain in detail various vessel internals for a horizontal 2 phase separator. Also explain potential operating problems occurring while separating oil and gas: -	10	CO4
Q 7	Explain in detail multiphase flow in oil wells for both vertical and horizontal tubing with typical temperature and pressure profile: -		CO2
Q 8	Which test is performed to confirm commercial quantity of hydrocarbon in exploratory wells? Explain it in detail with illustration.		CO6
Q 9	Construct IPR of a vertical well in a saturated oil reservoir using Vogel's equation. Following data is given: Porosity, $\Phi = 19 \%$ permeability, $k = 8.2 \text{ mD}$ Reservoir thickness = 53 ft. Reservoir pressure = 5651 psi = bubble point pressure (since saturated oil reservoir) Oil formation volume factor = 1.1 bbl/STB Oil viscosity = 1.7 cP Drainage radius = 2980 ft. Wellbore radius = 0.328 ft.	10	CO1

	Assume pseudo steady star	te flow of fluids and sk			
		SECTIO	ON-C		
) 10	Flowing gas density = 3.4 Flowing oil density = 51.5 Assuming 10ft shell heigh i. Diameter of separa ii. Allowable liquid fl (b) Suppose two flow follows Oil flow rate (bbl/day) Flowing bottomhole pressure (psi) find i. the reservoir pressurii. Production Index of iii. Maximum flow rate	re = 800 psig; separato lb/ft³ (for 20.3 lb./lbmc lb/ft³ (for 40 °API oil) t and 30% liquid full cator in inches using gas ow rate (in bbl/day) the rates conducted on an example of the formation of the well e possible	r operating temperature = 80 ° ol molecular weight of gas) alculate: capacity into consideration rough the separator n oil well showing results as Test 2 400 1800	10+10 =20	CO5
) 11	Construct IPR of a well in Fetkovich method. Following data is given: Average reservoir pressure	hod &	CO1		



Gilbert Chart for Q4.