

Name:

Enrolment No:



UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2019

Programme Name: MTECH PE

Semester : III

Course Name : Artificial lift technology

Time : 03 hrs

Course Code : PEAU8002

Max. Marks: 100

Nos. of page(s) : 2

Instructions : All questions are compulsory. There is no overall choice. However, internal choice has been provided. You have to attempt only one of the alternatives in all such questions.

SECTION A

S. No.		Marks	CO
1	Differentiate between artificial lift and natural lift.	4	CO1
2	Enumerate the causes of sand production.	4	CO1
3	Classify different types of squeeze cementing method.	4	CO1
4	Describe how the results are obtained from pressure transient testing.	4	CO4
5	Illustrate the process to determine AOF from the IPR.	4	CO2

SECTION-B

6	Describe the procedure to be followed for hydraulic fracturing design.	10	CO4
7	Using a diagram represent the following a. Screen with gravel pack method. b. The mud invasion profile c. IPR for saturated reservoir	10	CO2
9	With the help of diagram describe the unloading sequence. Illustrate the different types of gas lift installations. OR Describe the basic equipments for gas lift technology. Draw simplified flow diagram of a closed rotary gas lift system for single intermittent well.	10	CO3
9	Assuming single-phase oil flow in the reservoir, state the equation for flow rate in case of a) Transient flow b) Steady state flow c) Pseudosteady state flow	10	CO2

SECTION C

10 A 60-ft thick, 50-md sandstone pay zone at a depth of 9,500ft is to be acidized with an acid solution having a specific gravity of 1.07 and a viscosity of 1.5cp down a 2inch inside diameter (ID) coil tubing. The formation fracture gradient is 0.7 psi/ft. The wellbore radius is 0.328 ft. Assuming a reservoir pressure of 4,000psia, drainage area radius of 1,000ft, and a skin factor of 15, calculate
 (a) The maximum acid injection rate using safety margin 300 psi.
 (b) The maximum expected surface injection pressure at the maximum injection rate.

20

CO4

OR

Discuss the procedure for selection of ESP.

11 An oil well has a pay zone around the mid-perf depth of 5,200ft. The formation oil has a gravity of 26 °API and GLR of 300scf/stb. Water cut remains 0%. The IPR of the well is expressed as
 $q/q_{max} = 1-0.2(P_{wf}/P_r)-0.8(P_{wf}/P_r)^2$
 $q_{max}= 1500$ STB/day
 $P_r= 2000$ Psia
 A 2.5inch tubing (2.259 inch ID) can be set with a packer at 200ft above the mid-perf. Calculate the maximum expected oil production rate from the well with continuous gas lift at a wellhead pressure of 200psia if an unlimited amount of lift gas is available for the well.

q(stb/day)	GLR _{optimum} (scf/stb)	P _{tubing} (Psia)
400	4500	603
600	3200	676
800	2400	752

20

CO3

