UPES

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2017

Program: B. Tech. APE [GAS]   Semester – VII
Subject (Course): **Formation Evaluation And Well Stimulation**   **Max. Marks   : 100**
Course Code   : PTEG 323   **Duration   : 3 Hrs**
**No. of page/s: 02**

Section A [5X4=20 Marks] - Attempt All Four Questions

1. Define Well Stimulation. Create difference in matrix acidization & acid fracturing. **[5]**
2. Define Hydraulic Fracturing and its significance. **[5]**
3. Define 'Skin' Effect. Under what condition do you get a 'Positive Skin' and a 'Negative Skin'? **[5]**
4. Discuss the problems with Formation Damage. **[5]**

Section B [12X5=60 Marks] - Attempt All Five Questions

5. Calculate the SSP for a clean water bearing sand drilled with a fresh water base mud. The formation temperature observed 200^0F. Rmf and Rw measured respectively at 68^0F temperature, 0.31 and 0.054 ohm-m respectively. Illustrate borehole Environment. **[12]**

6. State the working principle and application of Induction tool. **[12]**

7. Write short Notes on Any **THREE** [4X3=12]

    I-   Football Effect

    II-   Membrane Potential

    III-   Skin Depth

    IV-   Archie's Equations

8. (a) Explain solvent cut and acetone test for hydrocarbon detection. **[6]**

    (b) Explain the fallowing Density and Neutron log responses (A through G). **[6]**
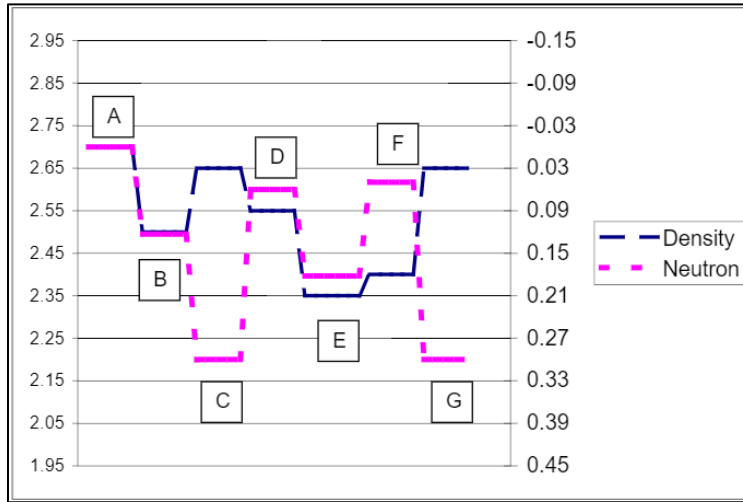
9. Use the following facts and compute **Rw & Sw? [12]**

Porosity%	Ro ohm-m	Rt ohm -m
19.0	4.2	13
15.0	6.7	9.8
12.0	10.4	15.6
17.0	5.2	9.6
13.0	8.9	15.6
18.0	4.6	17.5
14.0	7.7	13.6
16.0	5.9	12.5

Section C [Attempt Any One Question=20 Marks]

10. (a) Calculate the porosity for the following intervals. The measured travel times from the log at depth of 10,820 feet, is 65μs/ft. Does this value agree with density and neutron logs? Assume a matrix travel time, $\Delta tma = 51.6\mu sec/ft$. In addition, assume the formation is saturated with water having a $\Delta tf = 189.0\mu sec/ft$. **[10]**

(b) Establish, sonic porosity equation for shelly reservoir and clean reservoir. Explain, CYCLE SKIPPING and its significance in lag analysis. **[10]**

11. (a) Explain any five reasons of Formation Damage. Define sandstone acidization. **[10]**
(b) Discuss the propant selection strategy in Hydraulic Fracturing. Explain, Stress Caging. How it can be control? **[10]**

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