Name:

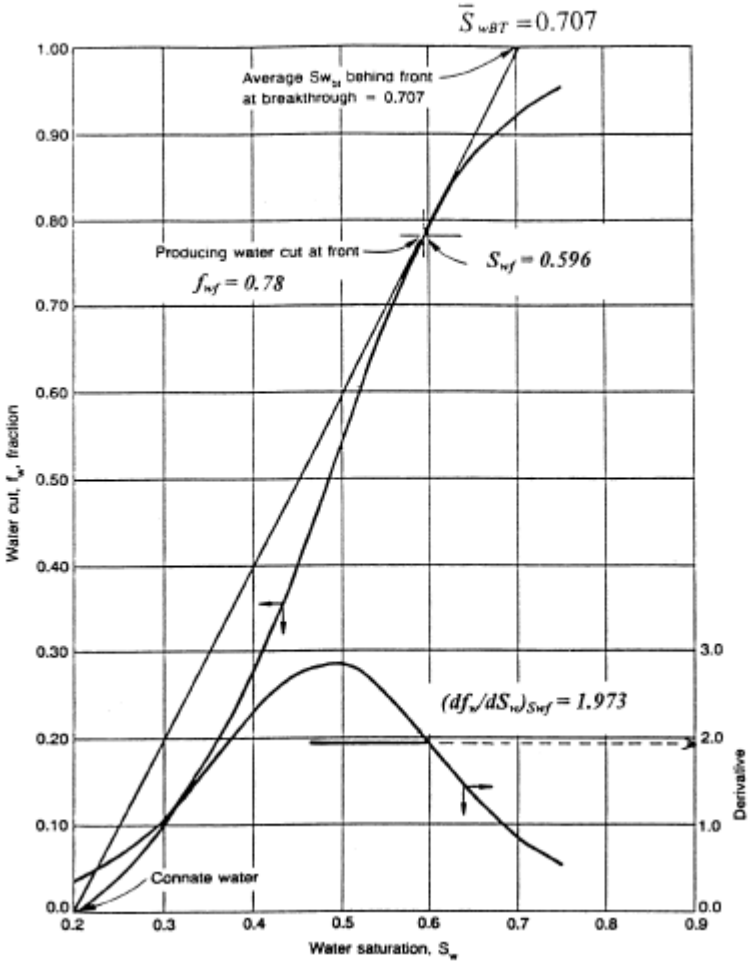
Enrolment No:

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Term Examination, December 2022

Programme Name: B.Tech APE Gas **Semester : VII**
Course Name : Enhanced Oil Recovery **Time : 3 hr**
Course Code : PEAU4010P **Max. Marks: 100**
Nos. of page(s) : 4
Instructions: a) Answer the questions in sequence.
b) Draw the diagrams wherever necessary.

SECTION A (Attempt all questions)

<table>
<tr><th>S. No.</th><th></th><th>Marks</th><th>CO</th></tr>
<tr><td>Q1.</td><td>Explain the screening criteria of Polymer flooding?</td><td>12M</td><td>CO1</td></tr>
<tr><td>Q2.</td><td>Using the data given below calculate the Dykstra-Parsons permeability variation.
<table>
<tr><th>Depth-ft</th><th>k md</th><th>Φ (%)</th><th>Depth-ft</th><th>k md</th><th>Φ (%)</th></tr>
<tr><td>8700-8705</td><td>31.00</td><td>12.80</td><td>-8740</td><td>378.00</td><td>17.20</td></tr>
<tr><td>-8710</td><td>12.30</td><td>11.10</td><td>-8745</td><td>401.00</td><td>14.70</td></tr>
<tr><td>-8715</td><td>13.30</td><td>8.90</td><td>-8750</td><td>0.82</td><td>2.12</td></tr>
<tr><td>-8720</td><td>10.11</td><td>11.60</td><td>-8755</td><td>0.05</td><td>9.60</td></tr>
<tr><td>-8725</td><td>23.20</td><td>11.70</td><td>-8760</td><td>0.04</td><td>21.40</td></tr>
<tr><td>-8730</td><td>97.70</td><td>14.40</td><td>-8765</td><td>0.05</td><td>19.10</td></tr>
<tr><td>-8735</td><td>2189.00</td><td>21.60</td><td>-8770</td><td>1080.00</td><td>21.40</td></tr>
</table>
The probability-log scale is provided in Fig.1.in appendix.</td><td>12M</td><td>CO2</td></tr>
<tr><td>Q3.</td><td>For the linear reservoir system, calculate the following when the water saturation at the producing well reaches 0.70. B_o=1.25 bbl/STB, B_w=1.02 bbl/STB, S_{wf}=30%, Pore volume=875000 bbl.
a) Reservoir water cut in bbl/bbl
b) Surface water cut in STB/STB
c) Water to Oil Ratio at Reservoir conditions
d) Water to Oil Ratio at surface conditions
e) Average water saturation at swept area.
f) Cumulative pore volume of water injected</td><td>12M</td><td>CO2</td></tr>
</table>

	g) Cumulative water injected.  		
Q4.	A combustion test in a confined pattern was conducted on a depleted oil reservoir with a current oil recovery of 10%. Estimate the final oil recovery expected after the commercial development of the in-situ combustion method, given the following. Confined area=1.30 acres Net thickness=25 ft Effective porosity=25% Irreducible water saturation=30% Initial oil formation volume factor=1.12 Current oil formation volume factor=1.05 Cumulative oil production of the central well P as the effect of combustion=12,470 STB.	**12M**	**CO3**
Q5.	Enumerate microbial enhanced oil recovery techniques.	**12M**	**CO4**

SECTION B (Attempt all questions)			
Q6.	Classify various Thermal Enhanced Oil Recovery methods and explain in detail the in-situ combustion methods with a neat diagram.	**20M**	**CO3**
Q7.	Explain the methodologies using Polyacrylamide and Polysaccharide along with the chemical technologies used?	**20M**	**CO4**

Appendix

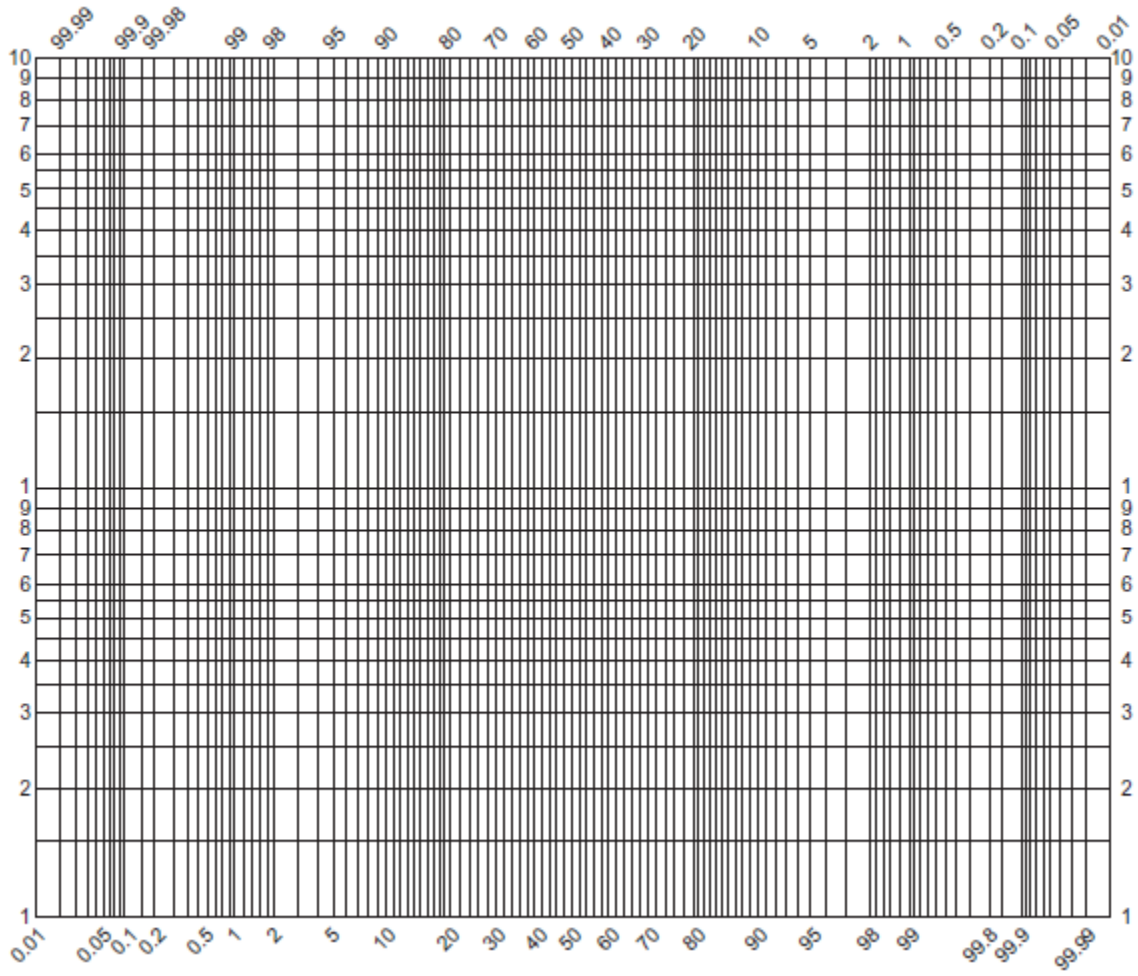


Fig.1. Probability-log scale.