CLASS: BE   **SEMESTER: VII**
BRANCH: CHEM. ENGG / CEP&P   **SESSION: MO/2018**

SUBJECT: CL7023 INTRODUCTION TO PETROLEUM RESERVIOR ENGG.

TIME: **1.5 HOURS**   **FULL MARKS: 25**

INSTRUCTIONS:
1. The total marks of the questions are 30.
2. Candidates may attempt for all 30 marks.
3. In those cases where the marks obtained exceed 25 marks, the excess will be ignored.
4. Before attempting the question paper, be sure that you have got the correct question paper.
5. The missing data, if any, may be assumed suitably.

Q1   Why effective porosity is more important than absolute porosity to a reservoir engineering?   [5]
       Define the term "Permeability" of a reservoir rock.

Q2   Starting from Kozeny-Carman equation derive an expression from volumetric flowrate q,   [5]
       Through the porous medium for the following cases (i) Linear flow (ii)   Radial flow.

Q3   Starting from the equation   [5]

$$q = \frac{2\pi Kh\Delta P}{\mu ln\frac{r_e}{r_w}}$$

       show that the field relative permeability is given by

$\frac{K_g}{K_o} = (R-R_s)\frac{\mu_g B_g}{\mu_o B_o}$

       Where the term has usual significance.

Q4   Discuss in brief the different type of forces which contribute to the expulsion of oil from   [5]
       reservoirs.

Q5   What is retrograde condensation? With a net Pressure- Temperature diagram show the   [5]
       region of retrograde condensation. Define to the following terms: (i) Critical Point. (ii)
       Cricondenbar. (iii) Cricondentherm.

Q6   Following information on a close gas reservoir is available reservoir temp 175°F, original   [5]
       reservoir pressure 3000psia. Sp. Gravity of gas 0.6 after producing 4×10^8scf of gas reservoir
       pressure is 2000psia.
       Determine (i) Amount of gas originally in placed(G). (ii) Amount of gas which will have
       been produce after the pressure has been reduce to 1000 psia. (iii) Cumulative gas
       recovery if abundant pressure 300psia. (iv) Recovery efficiency.

       Given: Z_{3000}=0.88, Z_{1000}=0.92, Z_{2000}=0.89, Z_{300}=0.97

:::: 13/09/2018 M ::::::