

Introduction to Energy Resources
(자원공학개론) (38523-01)

- 2019 Midterm Examination -

Student ID:

Name:

Notice

- Fill your name in the following:

*“I, _____, swear I solve all problems by myself in this midterm examination.
I will take any disadvantages if any dishonesty such as cheating is acted on my solution.”*

5 points will be deducted from your total score if you do not fill in your name above.

Problem 1.

For the sub-problems from 1-1 to 1-4, give the full names of the following abbreviations:

- 1-1. SPE [2 pts.]
- 1-2. API [2 pts.]
- 1-3. STP [2 pts.]
- 1-4. EUR [2 pts.]
- 1-5. Describe the standard conditions in petroleum engineering [2 pts.]

Problem 2.

Calculate the API Gravity of oil to the first decimal place, where oil density is 820 kg/m^3 and water density is $1,000 \text{ kg/m}^3$ [3 pts].

Problem 3.

List new seven sisters (Tip: they are National Oil Companies in the world) of the petroleum industry. Their abbreviations will also be accepted as answers, if correct. [7 pts.].

Problem 4.

Explain the “Vertical Integration” in the petroleum industry, in brief [10 pts.].

Problem 5.

Describe the vision and the five tasks of the 3rd Energy Master Plan (제 3 차 에너지기본계획) (2019-2040), in brief [15 pts.].

Problem 6.

What is the definition of energy mix? Also, explain the characteristics of energy mix in the Asia Pacific region [10 pts.].

Problem 7.

Explain reserve estimation based on deterministic and probabilistic concepts. [10 pts.].

Problem 8.

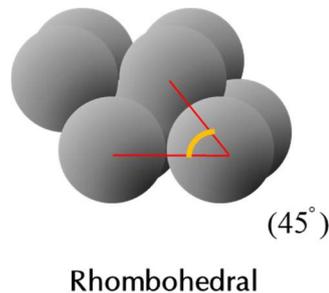
Explain King Hubbert Theory, in brief [10 pts.].

Problem 9.

List any five trap types. Explanations are not required. [5 pts.].

Problem 10.

Calculate porosity to the first decimal place where rock particles are regular rhombohedral-packed spheres. Herein, $\pi \approx 3.14$ and $\sqrt{2} \approx 1.41$ [5 pts.].



Problem 11.

Derive the following formula: $C_b = \phi C_f + (1 - \phi)C_m$,

where C_b is the bulk compressibility, ϕ is the porosity, C_f is the pore compressibility, and C_m is the matrix compressibility [10 pts.].

Problem 12.

Prove that the dimension of permeability is L^2 , where L refers to Length [5 pts.].

----- This is the End of the Midterm Examination -----