

**Petroleum Geology TA3820 and AES3820
Written Examination, November 1, 2007**

Prof. Dr. Stefan M. Luthi

PLEASE NOTE: Students in the third year of the BSc Applied Earth Sciences and students who take this course as an elective have to answer all questions. Students in the convergence course have to answer four questions of their choice. The questions should be answered *as concisely as possible* (this is part of the rating – chose keywords where possible). Please mention your name and student number at the top of each sheet.

1. Preservation of organic matter under anoxic conditions.

1. Name five conditions required for the formation of a subsurface petroleum reservoir.

2. mature oil source rock 3 migration entrapment

2. What are the four major biomolecule groups of living matter?

lipids, carbohydrates, proteins, hydrocarbons

3. Which elements in organic matter getting depleted during maturation?

Hydrogen and Oxygen. Sometimes Sulfur and Nitrogen by anaerobic bacteria

4. What is an oil shale?

5. Name the two major factors required for a reservoir rock.

6. Name three common trap types.

structural: anticline, stratigraphical: pinch out, combined: unconformity traps

7. What porosity types did we see in the carbonate sample passed around in the lecture?

>40%

8. Make a cross-section of a salt dome and associated layering and show the possible traps.

9. What are the three tectonic factors causing the different geometries of the oil fields in Iran, Saudi Arabia and Abu Dhabi?

Arabia and Abu Dhabi?

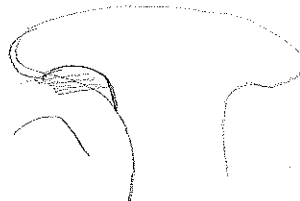
10. How much more conventional oil is left compared to what is already used? 50%

1. TOC >0,04%

75-90% C



some times



After all the forming of a subsurface petroleum reservoir ~~has to be~~ there has to be a series of these exceptional conditions