ENRG3310: Introduction to Energy and Sustainability **Midterm II**

Prof. Ognjen Š. Miljanić April 5, 2016

Name: _____ Student ID Number: _____

Last First

Read directions very carefully. Write your answer legibly in the designated spaces. *Total number of points is 150.*

1. Discuss four potentially adverse effects of construction of new hydroelectric power plants.

4×4 = 16 points

2. What was the Arab Oil Embargo, and when did it happen? Why did it start and how did it end?

10 points

3. Give the name of three of the most widely publicized accidents related to nuclear power.
3×3 points = 9 points

4. List standard units for the following physical quantities: *3×3 points = 9 points*
amount of charge

amount of absorbed radiation

power of an electrical appliance

5. Succinctly explain, in your own words, the process of nuclear fission. Explain the importance of enriched uranium, moderator, and neutrons. *15 points*

6. Describe and contrast the relative contributions of coal, oil, and natural gas to the greenhouse effect. Be as quantitative as possible. *12 points*

8. Succintly describe, in your own words, the following terms: *5×3 points = 15 points*

Associated natural gas

Lignite

Diesel fuel

Coal scrubbing

OPEC

9. The longest electric power transmission in the world, 1700 km, transmits power from the Inga Falls in the Congo river to the copper mining district of Katanga in the Democratic Republic of Congo (DRC). Assuming a resistance of 0.021 Ω/km, a current of 1,000 A, and a transmission voltage of 700 kV, calculate the percentage of electrical energy lost in this transmission. What would that percentage be if transmission occurred at 200 kV?

14 points

GROUP PROJECT PROSPECTUS

Turn this in separately. *50 points*