

EE 230
Homework Assignment 1
Spring 2010

Problem 1. Departmental alum, Sehat Sutardja (BSEE 1983) started a semiconductor company after a short stint in industry.

- a) What is the name of the company he co-founded?
- b) How do the annual sales of this company in 2009 compare to the combined value of all of the corn and soybeans produced in Iowa in a typical year.
- c) What is the market capitalization of this company today?

Problem 2 Sutardja received a Ph.D. in 1988 from Berkeley from one of the most distinguished professors in the electronics field.

- a) Who was the professor?
- b) He published a paper in the IEEE Journal of Solid State Circuits in December of that year. Obtain the abstract for that paper.
- c) What is the subject of that paper?
- d) What semiconductor technology was used in the integrated circuit he published?
- e) He has obtained several patents. Obtain the abstract for one of the patents that he has obtained.

Problem 3 Flash memories use transistors configured on an integrated circuit to store information digitally. What is the approximate average area per bit of information stored in a flash memory today?

Problem 4 A hard disk stores information magnetically on the surface of a circular disk. What is the approximate average area per bit of information on a hard disk drive today?

Problem 5 Audio data is stored in digital form on a DVD or CD and this data is converted back to analog form by passing the digital data to a Digital to Analog (D/A) converter. What is the number of bits of resolution that is typically used in consumer audio systems? How many analog levels can this D/A provide?

- Problem 6 Sedra and Smith Problem 1.4
Problem 7 Sedra and Smith Problem 1.11
Problem 8 Sedra and Smith Problem 1.14
Problem 9 Sedra and Smith Problem 1.16