Lecture 13: Quiz

Name:

Problem 1

What is experimental mathematics?
a) Search for relations and results using computers and calculations.
b) Publish theorems which are likely to be true.
c) Take results from experimental science and rewrite them mathematically.
d) Assist as a mathematician in an experimental lab.

Problem 2

In Benford's law, the first significant digit has the property that
a) the letter 1 appears most often.
b) the letter 9 appears most often.
c) all letters appear with the same frequency
d) the letters appear in a random order

Problem 3

Who is considered the first programmer?
a) Blaise Pascal   c) Charles Babbage
b) Ada Lovelace   d) Steve Jobs

Problem 4

The computer on the ground floor science center is called:
a) ENIAC   c) Mark I
b) Bomba   d) Colossus

Problem 5

Which of the following decision problems are in P?
a) Is n an even number?
b) Is n a prime?
c) n encodes a Turing machine which halts
d) n is the number of a graph which has a Hamiltonian cycle.

Problem 6

Which of the following decision problems are known to be in NP?
a) Graph isomorphism
b) Factoring integers
c) Integer partition problem
d) Is n a prime number?

Problem 7

What is a Turing machine?
a) A device to measure complexity.
a) A quantum computer.
c) A difference machine by Babbage.
d) A special Abacus.

Problem 8

What is Moore's law ?
a) The number of transistors on a microchip double every 2 years.
b) It is necessary to replace a computer every 2 years.
c) Moor's law is that there is no Moore's law.
d) Every two years, the size of a computer shrinks by a factor of 2.

Problem 9

What does it mean to be NP-complete?
a) One can complete a task in polynomial time.
b) One can reduce all NP problems to this problem
c) One needs exponential time to compute the task.
d) One needs polynomial time to reduce it to a NP problem.

Problem 10

Who showed that there are uncomputable decision problems?
a) Charles Babbage.   c) Pierre Fermat
b) Alan Turing   d) Kurt Goedel