

SAMPLE TEST

Informatics

A. Complete the missing words to preserve the logic of the sentence. The first letters of the target words have been provided. The descriptions in brackets should help you choose the right option.

An electrical (1) in _____ resists the flow of electricity. By contrast, a (2) co _____ allows current to flow readily.

For higher legibility of documents on screen, you can (3) ad _____ (*set, make small changes in*) the screen (4) re _____ of your monitor; the higher the number of pixels, the more information you can display on your screen and the smaller items appear.

An (5) in _____ translates high-level instructions into an intermediate form, which it then executes. In contrast, a compiler translates high-level instructions directly into machine language.

B. Put one word or nothing (-) in each gap. Note that contracted verb forms count as 1 word!

In 1949, the eminent American mathematician Warren Weaver proposed to simulate on a computer (1) _____ functions of (2) _____ language translator. (3) _____ the potential difficulties and strong opposition, Weaver's plan was generally simple and straightforward. Although the computer was usually thought of as a number cruncher (4) _____ those days, it had already shown great promise in a similar undertaking: deciphering codes.

In an industry (5) _____ product life cycles are measured in months, a savvy hacker can be a source of innovative thinking. Just think about it: who is (6) _____ likely to come (7) _____ with a revolutionary approach: a group of engineers and MBAs, or a gang of cunning hackers who live for the thrill of cracking technological problems?

After the Los Angeles earthquake that ripped through the headquarters of Dataproducts Corp., all the vital information was lost because some engineers (8) _____ backed up the files.

Some algorithms are designed primarily to take as (9) _____ time as possible, and only secondarily to save space.

Only finite precision computations can be performed by a computer, whereas real arithmetic may produce results of arbitrary precision, with (10) _____ restriction on length.

C. Complete each sentence with one word that best fits its meaning. Note that in some cases more equivalent options are possible. (5 points)

(1) _____ to what managers would expect, the real purpose of the recent Defcon conference was not to share hacks or conduct tutorials on bringing down the phone system. No, it was a chance for hackers to meet their peers and create a professional association.

(2) _____ many of the electronic spy systems developed during the Cold War that focussed on points of strategic importance, the ECHELON system is designed primarily for non-military targets, organisations and businesses in virtually every country.

(3) _____ global software piracy rates are declining, the number of illegal applications installed continues to grow, according to this week's report by Business Software Alliance.

(4) _____ to the alternate meanings of words in English, some sentences are very difficult to parse by programming. For example, in the sentence: "Time flies like an arrow" it is possible that either "time", "flies" or "like" can be a verb (Fruit flies like a banana!).

(2) a rectifier - _____

(3) a sector of a hard disk _____

(4) a conversion program _____

(5) inheritance (as used in OOP) _____

(6) program interpretation _____

(7) a hypertext _____

(8) steganography _____

(9) cryptanalysis _____

(10) feedback _____

F. Give synonyms to the underlined expressions or explain them.

- | | |
|------------------------------------|---|
| 1. to <u>conceal</u> information – | 4. to <u>gauge</u> the diameter of a wire - |
| 2. an <u>ancestor</u> group – | 5. an <u>indispensable</u> piece of equipment - |
| 3. to <u>assess</u> software – | |

G. Express the following symbols in words.

- | | |
|-----------------|-----------------|
| 1. \sqrt{b} – | 4. $1 \leq n$ - |
| 2. 10^n - | 5. # - |
| 3. a' - | |

H. Complete the texts with suitable prepositions where necessary. If no preposition is required, fill the space with a dash (-).

73% of all Americans are worried (1)_____ lax Internet security and criminals using the Internet (2)_____ illegal purposes. One (3)_____ five non-users say they are very concerned, compared to three (4)_____ ten Internet users.

As early as in 1980s, computer scientists began to encounter (5)_____ potential limits to the revolution in microelectronics. Despite (6)_____ the powerful aid of computers that could simulate all the possible paths an electric impulse might take, mapping out a microprocessor's circuitry took large teams of people between 12 and 18 months, compared with a few weeks required by the earliest chips.

Recent gains in computing power and versatility have come (7)_____ a dizzying rate.

If a company loses their crucial data as a result of an unexpected disaster, by the sixth day there's a 25% drop in daily revenue (8)_____ average.

The syntax of a programming language pertains (9) _____ the form or structure of programs written in that language.

The only answer (10) _____ potential intruders into a corporate network is a powerful firewall and a strong encryption system.

I. Put the words in brackets into the correct part of speech and form and complete the sentences.

It is not clear which branch of cryptology has been affected most by the (available) _____(1) of computers: while a cryptographer now has available much more powerful encryption machines, a (cryptanalysis) _____ (2) has much more powerful tools for breaking codes.

Two kinds of compression are lossless and lossy. Lossless compression (able) _____ (3) us to reconstruct the original message exactly; therefore, it is preferred when the original information must remain intact.

It is important to (distinction) _____ (4) between a virus and a "Trojan Horse". While the former is a program that merely replicates itself, the latter is a deliberately destructive program that does not replicate.

Like the dots and dashes of the Morse code, the opened and closed circuits of a microprocessor can (combination) _____ (5) to spell out instructions for machines as diverse as automatic coffee makers and personal computers.

As consumers, we are not willing to accept automobiles that won't work as advertised, why don't we (application) _____ (6) these standards of acceptance to our computer and software? Each customer should bear in mind that, regardless of the type of product, there is always a (choose) _____ (7) and that they can send the article back to the shop.

To appeal to the biggest audience, engineers add more features to a product, which often results in unnecessary (complex) _____ (8) and higher prices. All the major mobile-phone manufacturers offer models equipped with Web browsers. But the tiny screens and (difficult) _____ (9) of entering data aren't attracting many people.

What makes the robot different is that it makes use of an artificial arm analogous to the human limb and that it can be programmed to perform a whole (vary) _____ (10) of tasks.

Please note that in a real test other areas or topics may be included as well, with tasks more diverse than those displayed above. The total maximum score for written examination is 70 points.

KEY

A. 1 insulator 2 conductor 3 adjust 4 resolution 5 interpreter

B. 1 the 2 a 3 despite 4 in 5 where 6 more 7 up

8 hadn't 9 little 10 no

C. 1 contrary 2 unlike 3 while/whereas/although 4 due 5 unless

D. 1 C 2 C 3 A 4 C 5 C 6 B 7 B 8 C 9 C 10 C

E. For the proper definitions see the textbook or any computer science dictionary.

F. 1 hide 2 parent class 3 evaluate, judge 4 measure

5 vital, essential, extremely necessary

G. 1 the square root of b 2 ten to the nth [enθ] 3 a [ei] prime

4 one is less than or equal to n 5 hash

H. 1 about 2 for 3 in 4 out of 5 - 6 - 7 at 8 on 9 to 10 to

I. 1 availability 2 cryptanalyst 3 enables 4 distinguish 5 combine

6 apply 7 choice 8 complexity 9 difficulty 10 variety