**Lappeenranta University of Technology**
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**CT10A7001, Green IT and Sustainable Computing**
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# Individual Assignment:

# Exam questions

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## Preface

To begin with, it is essential to note that preparing high quality tests, in general, is decidedly difficult practice. Since many scholars have emphasized strong struggle among teacher-made and standardized tests, this topic could be an attractive source of further investigations in means of various essays, literature reviews and even theses. Williams (1991) states that teachers view own-based tests as strongly vital tool, which is worth of time and efforts spent for designing with the final outcome of enhanced learning. Nevertheless, within the framework of the present task, only skimming over several teachers' guidebooks will be used in order to develop four exam questions based on the book "Greening through IT" written by Bill Tomlinson (2010).

One of the biggest challenges of sustainability concept is its vague and mostly recommendation nature. Tomlinson (2010) has clearly recognized this limitation and based the book on the fact of inability of identifying sustainable panacea. Yet, aim of integrating IT as significantly influential tool opens broad ways of enhancing the learning environment. Therefore, 4 essay questions will be designed based on the book's content covering various areas author has presented. Meanwhile, all questions will be justified to prove its relevance and appropriateness. Additionally, the choice of essay questions format was not random; instead, essay tests' main advantage is the realism, as in business one is required to be capable of intelligent thoughts connection rather than answer multiple-choice questions (Clay and Root, 2001).

## Exam questions

1) a. Please, briefly define two main areas the term is assembled of and two trends where "Green IT" is used. (10p)
b. Briefly define and explain environmental opportunities presented by IT systems. (5p)
c. Briefly name forms, in which IT may support overcoming environmental challenges. (5p)

2) List main characteristics of human-centered computing approach (HCC), its main advantages and benefits. (20p)

3) IT has proved itself to be extremely helpful in engaging communities towards collective environmental actions. What are the main mechanisms and their examples of such impact? (30p)

4) Gartner's taxonomy of the environmental impact of the IT sector includes three orders. What is the main source of the first order environmental effects? Explain the first order environmental effects with examples. (30p)

## Discussion and justification

First two questions are designed according to the content of the chapter 1. Whereas such information density might be critically accepted, it is vital to state the importance of various preface and introduction chapters, as such, in any books. Andrew Cox (1997) in the book "Business success" stressed why it is essential to read the preface part. Firstly, it contains explanation of author's actual goals and motives for writing the book. Secondly, there is a trend for busy people to skip different important things. Whereas it is relevant for books, it is relevant for life in general. In other words, unless reader gets familiar with the very beginning of the book, there is no sense to go any further.

Initially, the question 1 may seem easy. It is honestly true for people paying attention to the basics. Indeed, if students do not spend proper efforts on such "easy" things, the whole learning process may go in the wrong way. The "Green IT" concept is certainly obvious to be answered in general, but the whole question is divided into subparts to examine knowledge of author's dimensions and goals pursued towards enhanced integration of IT into sustainable development.

The second question involves describing the human-centered computing approach (HCC). Since the whole book is based on this approach, which is "a philosophical-humanistic position regarding the ethics and aesthetics of the workplace" (Jaimes et al, 2006), being able to clearly identify how the book paradigm recognizes computers and humans, as well as knowing its major advantages, is crucial.

Questions 3 and 4 are relatively similar in their goals. Being the most complex, they require students to be well familiar with the book, which cannot be achieved by simple skimming over. However, besides the theoretical complexity, these tasks require students to be creative. Even though there are some examples illustrated in the book, being able to bring own example may improve the overall reflection of the material learned.

To summarize everything that has been mentioned above, the overall combination of four presented question creates the balance of the general knowledge needed to be able to pass the course and discipline-specific insights, which are crucial to reflect enhanced learning achieved during the course alongside sharing own thoughts and vision. The format of the essay is surely an important supportive, yet not the only possible tool. Deeper exam planning would require considering other question formats, e.g. multiple choice, yes-no, etc.

Moreover, appendix 1 represents the most considered parts of the book to source the questions section during the work. There are definitely various interesting topics and insights in the present book.

## References

Clay, B. and Root, E., 2001. *Is this a Trick Question?: A Short Guide to Writing Effective Test Questions*. Kansas Curriculum Center.

Cox, A.W., 1997. *Business success: A way of thinking about strategy, critical supply, chain assets and operational best practice*. Earlsgate Press.

Jaimes, A., Sebe, N. and Gatica-Perez, D., 2006, October. Human-centered computing: a multimedia perspective. In *Proceedings of the 14th annual ACM international conference on Multimedia* (pp. 855-864). ACM.

Tomlinson, B., 2010. Greening through IT. *Information Technology for Environmental Sustainability, MIT Press, Cambridge, MA*.

# Appendix 1

p.3, 10 – “Green IT”

(The term of Green IT has been used widely. Please, briefly define two main areas the term is assembled of and two trends where “Green IT” is used.);

Briefly define and explain environmental opportunities presented by IT systems;

Briefly name forms, in which IT may support to overcome environmental challenges

p.13 – HCC computing (List main characteristics of human-centered computing approach (HCC) and its main advantages and benefits

p.14-15 – NSF

p.17 – China; last paragraph

p.18 – Environmental issues and human rights (yes-no question)

p.20 – Global sustainability; 2 parag. (yes-no)

p.22 – Value of EHCC approach

p.26 – Central arguments of Green IT

p.29 – Global climatic disruption problems

p.32 – Resources relevant to Green IT

p.38 – 3 types of waste

p.67-69 – Technology different use

p.70 – first-order impact of IT (mentioned several times, 92) Gartner’s taxonomy of environmental impact of the IT sector includes three orders. What is the main source of first order environmental effects? Explain the first order environmental effects alongside examples.

p.78 – IT standards

p.91 – Green IT systems arrangement

p.93 – Greas of green it

p.106 – Paradox of green consumerism

p.149 – Mechanisms of impact for collective change (IT has proved itself to be extremely helpful in engaging communities towards collective environmental actions. What are the main mechanisms and their examples of such impact?