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WRITTEN EXAMINATION  
FOR THE LECTURE  
“E-COMMERCE”  
SUMMER SEMESTER 2005  
JULY 21, 2005  
PROF. DR. RALF MÖLLER

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Name: \_\_\_\_\_

Student Id: \_\_\_\_\_

Name of curriculum: \_\_\_\_\_

Signature: \_\_\_\_\_

**Please note:**

1. **Do not open the exam sheets until permitted by the supervisor!**
2. **Put your student identification card as well as your passport on the table.**
3. **Check if your student Id is on the list of Ids handed out by the supervisors. If your Id is not on this list, then**
  - (a) **Fill out a proviso, which will be given to you by the supervisor. You may not start the exam until you have returned the proviso to the supervisor.**
  - (b) **Also fill out the additional form given to you by the supervisor. Please go to the students office which is responsible for your curriculum and let them sign the form. Personally return the signed form to the STS secretary (Harburger Schloßstr. 20, 2nd floor, Frau Hantschmann); bring your passport for identification as well.**
4. You have **90 minutes** for answering the questions. **Additional resources are not allowed.**
5. The symbol “⊖” gives an advice on how much minutes to spend for answering a question.
6. There is sufficient space for your solutions on the examination sheets.
7. If you receive **additional pieces of paper** from the supervisor, please write your name and student Id also on these pages, and add a page number.
8. If you **need to leave the examination room**, silently **inform the supervisors. Do not leave your table.** Wait until the **supervisor approaches your desk and gives you the permission to leave the room.**

1. General questions about Internet technology – true or false?

**Points per question: no answer = 0 points, correct answer = 1 point, incorrect answer = -1 point. Minimum number of points: 0.**

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Question	True	False
Web pages are transported over the Internet using SMTP.	<input type="radio"/>	<input type="radio"/>
Certain IP addresses are reserved for certain Internet protocols.	<input type="radio"/>	<input type="radio"/>
Certain port numbers are reserved for certain Internet protocols.	<input type="radio"/>	<input type="radio"/>
Given a port number, the Domain Name Service finds out the URL for that port.	<input type="radio"/>	<input type="radio"/>
A web browser can only fetch and display a web page if this page has a URL.	<input type="radio"/>	<input type="radio"/>
MIME types are used to securely transmit credit card payment information.	<input type="radio"/>	<input type="radio"/>
A class B network can have at most 256 hosts.	<input type="radio"/>	<input type="radio"/>
UDP is a <i>network layer</i> (OSI level 3) protocol.	<input type="radio"/>	<input type="radio"/>
IP is a <i>transport layer</i> (OSI level 4) protocol.	<input type="radio"/>	<input type="radio"/>
TCP connections are reliable (packages are never lost).	<input type="radio"/>	<input type="radio"/>
There are IP addresses which must not be registered.	<input type="radio"/>	<input type="radio"/>
More than one URL can be used to address a resource on the Internet (e.g., web page).	<input type="radio"/>	<input type="radio"/>
HTTP is a connectionless protocol.	<input type="radio"/>	<input type="radio"/>
HTTP is a stateless protocol.	<input type="radio"/>	<input type="radio"/>

2. Effects of the Internet on commerce and commercial opportunities of the Internet:

(a) What is meant by the term *disintermediation*?

(b) Illustrate the disintermediation effect with a simple example, e.g., describe a Commerce scenario and briefly explain how disintermediation is achieved with ECommerce in this scenario.

(c) What is meant by the term *reintermediation*?

(d) Illustrate the reintermediation effect with a simple example, e.g., describe a Commerce scenario and briefly explain how disintermediation is achieved with ECommerce in this scenario.

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3. Briefly explain (in 3–4 sentences) the following terms and give an example illustrating each term:

(a) Broker

(b) Reverse Auction

(c) Frictionless Commerce

4. Provide arguments why and how *dynamic pricing* is supported by the Internet.

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5. Business Models: Select two business models (BMs) according to Rappa's classification and describe each with a few sentences:

(a) • Name of BM:

• Description of BM:

(b) • Name of BM:

• Description of BM:



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6. Internet Technology and XML:

- (a) Describe the structure of a URL. Use an example URL for this.
- (b) HTTP is a request/response protocol. Name three HTTP *request* message types as well as one HTTP *response* message type.
- (c) Which HTTP message types can be used to transmit data to a server? Which HTTP message type would you use to transmit large amounts of data to the server? Justify your answer.
- (d) What are “sessions” and why are they needed?
- (e) You want to define the document structures of XML documents. Which options do you have? Name at least two options.
- (f) Which technique makes it possible to transform one XML document into another (with probably different document structure)?

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7. Digital Encryption Techniques:

- (a) Which general mathematical properties should an encryption function have in order to be useful for cryptography? Name at least 2 properties and explain why the property is needed.

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- (b) What is referred to as public key cryptography? Why is this technology also called *asymmetric* cryptography?

- (c) Public key cryptography can be used for document encryption as well as for digital certificates. Explain the fundamental difference in key usage in both cases.





10. Semantics of Web Services and the Semantic Web:

(a) Briefly explain (3–4 sentences) *the difference* between syntax and semantics.

(b) How can ontologies help for matchmaking of web services?

(c) Model the following statements as a description logic TBox. Give appropriate definitions for the following concepts. Try to use *defined* concepts (providing sufficient *and* necessary conditions) whenever possible (read the descriptions carefully).

i. A *car* has exactly one manufacturer (which is of type *car manufacturer*), exactly one color (which is of type *color*), and exactly one owner (which is of type *person*).

ii. Do you think that *car* (as specified above) should be a defined concept? Justify your answer.

10. (c) iii. *Mercedes* is a special car manufacturer.

iv. A *Mercedes car* is defined as a special car whose manufacturer is Mercedes.

v. A *car owner* is defined as a person who owns at least one car.

vi. A *Mercedes car owner* is defined as a person who owns at least one Mercedes car.

vii. A *Mercedes car fan* is defined as a car owner who owns only Mercedes cars.

(d) Does the concept *car owner* subsume the concept *Mercedes car owner*? Justify your answer.

(e) Does the concept *Mercedes car owner* subsume the concept *Mercedes car fan*? Justify your answer.

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Erreichbare Punkte: 110

Minuten: 90