



Institutionen för Data-
och Systemvetenskap



STOCKHOLMS
UNIVERSITET



KUNGLIGA
TEKNISKA
HÖGSKOLAN

***:96 (SU) and 211263 (KTH)
Internet Application Protocols
and Standards**

Exam 2005-10-15-solved.doc

The following documents are allowed during the exam:

1. Documents in Compendium 1, printed on colored paper.
2. Documents in Compendium 2, printed on colored paper.
3. Documents in Compendium 3, printed on colored paper.
4. Documents in Compendium 7, printed on colored paper.
5. Documents in Compendium 9, printed on colored paper.
6. Ordinary language dictionaries between English and Swedish.

Note 1: Compendium 0, 4, 5, 6 and 8 are not allowed during the exam.

Note 2: The exam supervisor will check that you do not have copies of the disallowed compendiums. Bringing such compendiums on colored paper is cheating and can result in suspension of your rights to study.

Note 3: Underscoring and short handwritten notes in the yellow documents are allowed.

Note 4: A few copies of the allowed compendiums will be available for loan during the exam for students who have not brought the compendiums.

Important warning

It is not acceptable to answer an exam question by just a verbatim quote from the allowed documents above. You must show that you understand the question and your answer by using your own words.

Jacob Palme will be reachable by phone 08-664 77 48 around 11:00 if you need any clarification of any of the questions in the exam..



No.	Question in English	Question in Swedish	Max points
1	The PICS standard for content filtering claims to be neutral to different filtering strategies based on different values. How does it achieve this?	PICS-standarden för innehållsfiltrering hävdar att den är neutral i förhållande till olika filtreringsstrategier, baserade på olika värderingar. Hur kan den åstadkomma detta?	6

Answer:

The PICS standard specifies that filtering is done using one or more rating system. Each rating system defines one or more categories, which specify more or less ortogonal properties of a web page or site, and values on the scales. PICS itself does not define the rating systems and scales. Thus, different people can define different rating systems suitable to their sets of values. Some rating systems can be defined, so that the user can choose different limits on the categories depending on the sets of values of that user.



No.	Question in English	Question in Swedish	Max points
2	E-mail clients in personal computer usually will connect to a nearby mail server to send e-mail. They do not directly connect to a remote server close to the recipient, or to a server at a bridge to another net, even if the recipient is there. Why?	E-postprogram i persondatorer brukar vanligen skicka ut utgående brev genom att koppla sig till en närbelägen server, inte genom att koppla sig direkt till en server nära mottagaren, inte heller till en brygga för e-post till mottagare som inte kan nå direkt från Internet. Varför?	6

Answer:

Advantages with sending mail via a local MTA:

- Faster transmission to a local server, and faster to send all mail to a single server, and not to separate servers for different recipients.
- A local server can sometimes reduce transmission costs (for example through trans-atlantic cables) by sending only a single copy of a message to multiple recipients and have it split closer to the recipients.
- If one of the recipient servers is down, it is easier for an MTA than for a mail client to keep the message and try again automatically at a later time.
- Many ISPs do not allow e-mail connections to other than the local MTA provided by that ISP, in order to stop spammers.

3	Is it permitted to send web pages through HTTP, where the page is compressed using a compression method like for example zip? If so, how is this done?	Är det tillåtet att sända websidor med HTTP komprimerade med en kompressionsmetod som t.ex. zip? Om det är tillåtet, hur gör man?	6
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Answer:

Yes. In order to do this, the recipient agent must specify that it allows compression, using the Accept-Encoding HTTP header in the request.

After that, the sending agent can use the Content-Encoding or the Transfer-Encoding HTTP header in the response to tell the recipient agent that the content is compressed, and which compression method is used.

4	You are given the task of developing a standard for the distribution of news. News consists of one or more notices. Each notice has one or more authors, one title and one body. The body should be in an HTML-like format, and can include one or more	Du får i uppdrag att utveckla en standard för distribution av nyheter. Nyheter består av en eller flera notiser. Varje notis har en eller flera författare, en titel och en kropp. Kroppen skall vara i ett HTML-liknande format, och kan inkludera	6
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No.	Question in English	Question in Swedish	Max points
	<p>pictures in GIF, JPEG och PNG format, to be placed in specific positions in the HTML-like text. Specify such a standard using XML as the transport format. You can choose to use DTD or another method of specifying the XML format.</p>	<p>bilder i GIF, JPEG eller PNG-format, som skall placeras på angivna platser i kroppens text. Specificera en sådan standard, med användning av XML som transportformat. Du kan välja att använda DTD eller någon annan metod för specificering av XML-formatet.</p>	

Answer:

(Note: There may be better ways to specify embedding XHTML in XML. I will try to find out.)

DTD specification

```
<!ELEMENT news (notice*)>
<!ELEMENT notice (author*,title,newsbody,image*)>
<!ELEMENT title (#PCDATA)>
<!ELEMENT author (#PCDATA)>
<!ELEMENT newsbody ANY>
<!ELEMENT image (#PCDATA)>
<!ATTLIST newsbody
content-type CDATA #REQUIRED
>
<!ATTLIST image
content-type CDATA #REQUIRED
content-transfer-encoding CDATA #REQUIRED
>
```

XML example

```
<?xml version="1.0" standalone="no"?>
<!DOCTYPE news SYSTEM "http://dsv.su.se/jpalme/internet-
course/xml/news.dtd">
<news>
<notice>
<author>Jacob Palme</author>
<title>The king has got his first grand-child</title>
<newsbody content-type="text/html">
...
</newsbody>
<image content-type="image/gif" content-transfer-encoding="base64">
...
</image>
</notice>
</news>
```