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.
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 available by phone 08-664 77 48 for clarification of exam questions until 12:00.
No. | Question in English                                                                 | Question in Swedish                                                                 | Max points
---|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------
1  | What are the pros and cons of each of ABNF, ASN.1 and XML as languages for specificaiton of the coding of network protocols. | Vilka är för- och nackdelarna med var och ett av ABNF, ASN.1 och XML som språk för specifikation av kodningen av nätverksprotokoll. | 6        

**Answer:**

<table>
<thead>
<tr>
<th>Specification system</th>
<th>ABNF</th>
<th>XML</th>
<th>ASN.1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pros</strong></td>
<td>• Simple and easy to read both specification and data.</td>
<td>• Can specify data structures</td>
<td>• Can specify data structures</td>
</tr>
<tr>
<td></td>
<td>• Can specify almost any textual protocol</td>
<td>• Easy to read transmission format</td>
<td>• Compact transmission format</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Syntax checkers available</td>
<td>• Good for binary data</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Can easily be accessed from the WWW</td>
<td>• No framing problems</td>
</tr>
<tr>
<td><strong>Cons</strong></td>
<td></td>
<td>• Inefficient, wordy</td>
<td>• Unreadable data without a program</td>
</tr>
</tbody>
</table>

2  | Write an XML specification for transmission of a travel itinerary, containing a series of travel segments from one place to another place with a certain departure and arrival time for each travel segment. | Skriv en XML-specifikation för att överföra en resplan, som innehåller en serie delresor från en plats till en annan plats vid en given avresetid och ankomsttid för varje delresa. | 6        


**Answer alternative 1:**

**DTD:**

```xml
<!ELEMENT exam061021a (step+)>  
<!ELEMENT step EMPTY>  
<!ATTLIST step  
    from CDATA #REQUIRED  
    to CDATA #REQUIRED  
    departure CDATA #REQUIRED  
    arrival CDATA #REQUIRED >
```

**XML:**

```xml
<exam061021a>  
    <step from="Stockholm" to="Amsterdam"  
        departure="20061105:06:23"  
        arrival="20061105:08:53" />  
    <step from="Amsterdam" to="Stockholm"  
        departure="20061105:17:23"  
        arrival="20061105:20:23" />  
</exam061021a>
```

**Answer alternative 2:**

**DTD:**

```xml
<!ELEMENT exam061021b (step+)>  
<!ELEMENT step (from,to,departure,arrival)>  
<!ELEMENT from (#PCDATA)>  
<!ELEMENT to (#PCDATA)>  
<!ELEMENT departure (year,month,day,hour,minute)>  
<!ELEMENT arrival (year,month,day,hour,minute)>  
<!ELEMENT year (#PCDATA)>  
<!ELEMENT month (#PCDATA)>  
<!ELEMENT day (#PCDATA)>  
<!ELEMENT hour (#PCDATA)>  
<!ELEMENT minute (#PCDATA)>  
```

**XML:**

```xml
<exam061021b>  
    <step>  
        <from>Stockholm</from>  
        <to>Amsterdam</to>  
        <departure>
```
No. | Question in English | Question in Swedish | Max points
--- | --- | --- | ---

Note 1: One could argue that answer alternative 1 is not proper XML, since it uses non-XML markup (for example the separation character ":"). However, this kind of mixture of XML and non-XML formatting is very common and can thus not be regarded as incorrect XML.

Note 2: Since the exam question did not specify whether DTD or XML or both was required, I gave full score for either only DTD or only XML.
<table>
<thead>
<tr>
<th>No.</th>
<th>Question in English</th>
<th>Question in Swedish</th>
<th>Max points</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Is it possible, using HTTP, to request download of a page only if that page has been modified after a certain date? If yes, how?</td>
<td>Är det möjligt i HTTP att begära nedladdning av en sida endast om sidan har ändrats sedan en viss tidpunkt. Om ja, hur?</td>
<td>6</td>
</tr>
</tbody>
</table>

**Answer:**

Put in the HTTP request header an header field like:


| 4   | The “Message-ID” header field is mandatory in Usenet News but optional in e-mail. Why is it mandatory in Usenet News? | Fältet ”Message-ID” i huvudet på ett meddelande är obligatoriskt i Usenet News men inte obligatoriskt i e-post. Varför är det obligatoriskt i Usenet News? | 6 |

**Answer:**

Because the Message-ID is used for loop control in the distribution of messages between servers, and the method used for distribution between servers in Usenet News entails a large risk for loops.