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Assalam-o-Alykum VU Students,

This is MS Rehman from MS-Team, and I hope you are all doing well. As you all know, we have been providing assistance to VU students through our virtual university WhatsApp groups and communities for quite some time now.

Currently, many of you are preparing for the final term exams, and we understand the importance of having access to previous years' papers to prepare effectively. That's why we have created a special group named "Final Term current papers," where we are collecting papers from various sources and sharing them with you all.

We also understand the significance of keeping these papers for future use, which is why we are creating video files of these papers and uploading them on our channel "MS CreatiVePlatForm" for your convenience. We are also compiling all the papers of each date and subject into separate files to make it easier for you to find and use them.

I would like to take this opportunity to thank the entire MS-Team for their tireless efforts in providing assistance to VU students. We are a group of dedicated individuals who believe in helping students achieve their academic goals. We provide support not only for exams but also for assignments, GDBs, and other academic activities.

- We hope that our efforts are helpful to you, and we encourage you to join our communities and groups to stay updated with the latest information and assistance.

  Best of luck for your exams.

  JazakAllah Khair.

As we continue on our academic journey

I humbly request your prayers for our team and the success of our shared goals.

May Allah bless **us** with the strength, guidance, and wisdom to achieve our academic pursuits, and may our efforts be fruitful and beneficial for ourselves and others.

Jazak Allah Khairan (may Allah reward you with goodness)."

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EFFORTS by MS-Team

Important Note!

Some questions are concept-based, so finding exact answers directly from slides or handouts was not always possible. We have tried our best to search and extract the most relevant material from the handouts/slides so that students can understand the concepts properly instead of only memorizing answers.

For a few questions, additional explanation and guidance have also been included with the help of ChatGPT and other learning resources to make the answers more understandable and complete. However, the main effort has been to keep the content aligned with the handouts and course concepts as much as possible.

We hope this file helps you a lot. We have tried our level best to provide the most relevant and authentic answers, but since some questions may slightly differ from the actual paper or slides, we strongly recommend that every student verify the answers according to their own handouts and understanding before using them. We are not responsible for any mistakes or differences in the content.

May Allah grant us success, ease our efforts, and bless us with wisdom, patience, and perseverance. Keep your faith strong, because with prayer and hard work every difficulty becomes easier. Please remember us in your prayers as well.

Thank you, and best of luck for your exams!

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Why is UTF-8 Encoding Important in XML?

Answer:
UTF-8 encoding prevents character encoding problems and supports characters from different languages.

XML Declaration Statement

Answer:

```
<?xml version="1.0" encoding="UTF-8"?>
```

XML Tree

Answer:
An XML tree starts with a root element, and all other elements are its child nodes.

Example:

```
root
└── child
    └── subchild
```

DOM Node Types and Their Numerical Values

- Element Node = 1
- Attribute Node = 2
- Text Node = 3
- Comment Node = 8
- Document Node = 9

Short Questions (3 Marks)

1. Remove the `age` attribute of the fifth teacher element

```
xmlDoc = loadXMLData("staff.xml");
x = xmlDoc.getElementsByTagName("teacher");
x[4].removeAttribute("age");
```

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2. Complete syntax of `service()` method

```
public void service(ServletRequest req,
                    ServletResponse res)
                    throws ServletException,
IOException
```

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3. How many ways are there to represent JAX-WS?

There are **two ways** to represent JAX-WS:

1. Bottom-Up Approach
2. Top-Down Approach

4. JDOM API Java Codes

i. Extract the root element

```
Element root = doc.getRootElement();
```

ii. Extract any specified attribute of root element

```
Attribute attr = root.getAttribute("attributeName");
```

Long Questions (5 Marks)

1. Five most common JDOM classes

1. Document
2. Element
3. Attribute
4. Text
5. Comment

2. Roles in Web Services Architecture

There are **three roles**:

1. Service Provider

- Creates and publishes the web service.

2. Service Requester

- Finds and uses the web service.

3. Service Registry

- Stores information about available web services and helps requesters discover them.

3. Replace the data of the first element with "Right Handed Bowler"

```
xmlDoc = loadXMLData("team.xml");
x = xmlDoc.getElementsByTagName("Style");
x[0].childNodes[0].nodeValue = "Right Handed Bowler";
```

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Short Questions

1. Correct the XML Code

Given:

```
<to/>student<to>
<From>teacher<from>
<Body>upload assignment this weekend</body>
```

Correct Code:

```
<to>student</to>
<From>teacher</From>
<Body>upload assignment this weekend</Body>
```

2. Meaning of Status Codes

200 OK

- Request was successful.

404 Not Found

- Requested resource/page was not found.

3. XML Syntax for Element `window`

```
<window height="50" width="50"/>
```

Long Questions

1. XML Code of Tree Element

Agar exam mein tree diya ho to XML code root se start karke child elements ko nesting ke sath likhna hota hai. Picture ke baghair exact code nahi bataya ja sakta.

2. XMLHttpRequest `readyState` Values (0–4)

Value	Purpose
0	Request not initialized
1	Server connection established
2	Request received
3	Processing request
4	Request finished and response is ready

3. DTD Code

Given DTD:

```
<!ELEMENT note (firstname, lastname, email)>
<!ELEMENT employee (#PCDATA)>
<!ELEMENT firstname (#PCDATA)>
<!ELEMENT lastname (#PCDATA)>
<!ELEMENT email (#PCDATA)>
```

XML document using this DTD:

```
<?xml version="1.0"?>

<!DOCTYPE note [
<!ELEMENT note (firstname, lastname, email)>
<!ELEMENT firstname (#PCDATA)>
<!ELEMENT lastname (#PCDATA)>
<!ELEMENT email (#PCDATA)>
]>

<note>
   <firstname>Ali</firstname>
   <lastname>Ahmad</lastname>
   <email>ali@gmail.com</email>
</note>
```

Short Questions

1. Three Ways to Access Nodes in XML DOM

1. `getElementById()`
2. `getElementsByTagName()`
3. `getElementsByName()`

2. Correct the XML Code

Rules yaad rakho:

- Every opening tag must have a closing tag.
- Tags are case-sensitive.
- XML document must be properly nested.

Example correction:

```
<to>Student</to>
<from>Teacher</from>
<body>Upload assignment this weekend</body>
```

3. Solution of Name Conflict

Answer:
XML Namespaces are used to solve name conflicts.

Example:

```
<h:table xmlns:h="http://www.w3.org/TR/html4/">
<f:table
xmlns:f="https://www.w3schools.com/furniture">
```

Long Questions

1. Write DTD for Given XML Code

General format:

```
<!DOCTYPE note [
<!ELEMENT note (to,from,body)>
<!ELEMENT to (#PCDATA)>
<!ELEMENT from (#PCDATA)>
<!ELEMENT body (#PCDATA)>
]>
```

(Exact answer depends on the XML code given in paper.)

2. Write XML for Given DTD

If DTD is:

```
<!ELEMENT note (to,from,body)>
<!ELEMENT to (#PCDATA)>
```

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```
<!ELEMENT from (#PCDATA)>
<!ELEMENT body (#PCDATA)>
```

XML will be:

```
<note>
   <to>Ali</to>
   <from>Ahmed</from>
   <body>Hello</body>
</note>
```

Short Questions

1. Traversing (Definition)

Answer:
Traversing is the process of moving through the nodes of an XML document tree to access, search, or manipulate data.

2. Syntax of External Entity

Answer:

```
<!ENTITY company SYSTEM "company.xml">
```

or

```
<!ENTITY name SYSTEM "data.txt">
```

3. Features of XML

- XML is extensible.
- XML is platform independent.
- XML is self-descriptive.
- XML stores and transports data.
- XML is human readable.

Long Questions

1. DTD Program

If a simple XML of company/employees was given, handout-style DTD is usually:

```
<!DOCTYPE company [
<!ELEMENT company (employee)>
<!ELEMENT employee (#PCDATA)>
]>
```

(Exact DTD depends on the XML code given in paper.)

2. Company Program

If DTD was given and XML was required:

```
<company>
   <employee>Ali</employee>
</company>
```

(Exact answer depends on the company structure provided in the paper.)

3. DOM Properties

Common DOM properties from handouts:

- `nodeName`
- `nodeValue`
- `nodeType`
- `parentNode`
- `childNodes`
- `firstChild`
- `lastChild`
- `nextSibling`
- `previousSibling`
- `attributes`

Very Short Exam Answers

Traversing: Moving through XML nodes.

External Entity Syntax:

```
<!ENTITY name SYSTEM "file.xml">
```

XML Features:

- Extensible
- Self-descriptive
- Platform independent
- Human readable
- Stores and transports data

DOM Properties:

- nodeName
- nodeValue
- nodeType
- parentNode
- childNodes

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Short Questions

1. How many ways are there to access a node in XML DOM?

There are three ways:

1. `getElementById()`
2. `getElementsByTagName()`
3. `getElementsByName()`

Explanation: These methods are used to access nodes/elements in an XML document.

2. Write XML code to create two elements

```
<name>Ali</name>
<city>Lahore</city>
```

3. Name any three XML document building blocks

- Elements
- Attributes
- Entities

(Other valid answers: PCDATA, CDATA)

Long Questions

1. XML Code → DTD

If XML was:

```
<note>
   <to>Ali</to>
   <from>Ahmed</from>
</note>
```

DTD:

```
<!ELEMENT note (to,from)>
<!ELEMENT to (#PCDATA)>
<!ELEMENT from (#PCDATA)>
```

(Exact answer depends on the XML code given in the paper.)

2. Convert XML Code into XML DOM

If XML was:

```
<company>
   <employee>Ali</employee>
</company>
```

DOM Tree:

```
company
└── employee
      └── Ali
```

Or in DOM terms:

- Document Node
  - Element Node (company)
    - Element Node (employee)
      - Text Node (Ali)

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Thank you for your valuable time

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Best Regards : MS-Team

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