Q1 What is an XML Element? Explain with example.

Ans. • An XML element is everything from (including) the element's start tag to (including) the element's start tag to (including) the element's end tag.

→ An element can contain:
- text
- attributes
- other elements
- Or a mix of the above

→ eg:

```
<bookstore>
      <book category = "children">
           <title> Harry Potter </title>
           <author> JK. Rowling </author>
           <year> 2005 </year>
           <price> 29.99 </price>
      </book>
      <book category = "web">
           <title> Learning XML </title>
           <author> Erik T. Ray </author>
           <year> 2003 </year>
           <price> 39.95 </price>
      </book>
</bookstore>
```

• In the example above:
<title>, <author>, <year> and <price> have text content because they contain text (like 29.99).
<bookstore> and <book> have element contents, because they contain elements.

Q2. What is a DTD? ~~aka~~ Explain the purpose of DTD.

Ans. • A document type definition (DTD) is a specification file that contain a set of markup declarations that define a document type for an SGML-family markup language (GML, SGML, XML, HTML). The DTD specification file can be used to validate documents.

• There are 2 data types, PCDATA and CDATA

→ PCDATA is parsed character data.

→ CDATA is character data, not usually parsed.

→ Syntax:

```
<!DOCTYPE element  DTD identifier
 C
    first declaration
    second declaration
    :
    nth declaration
 ]>
```

• eg:
```
<! DOCTYPE Library C
    <!ELEMENT library (book+) >
    <!ELEMENT book (title, author, genre)>
    <!ELEMENT title (#PCDATA)>
    <!ELEMENT author (#PCDATA )>
    <!ELEMENT genre (#PCDATA)>
 ]>
```

• In this example, the DTD specifies that a 'library' element must contain one or more 'book' elements, each of which must contain 'title', 'author' and 'genre' elements.

Q3. What is XSL and how does it work?

Ans. XSL is a language for expressing style sheets.

- An XSL style sheet is, like with CSS, a file that describes how to display an xml document of a given type.

- XSL shares the functionality and is compatible with CSS2 (although it uses a different syntax).

→ ~~It also adds:~~

→ Working:

- Styling requires a source xml document, containing the information that the style sheet will display and the style sheet itself which describes how to display a document of a given type.

- The following shows a sample xml file and how it can be transformed and rendered.

○ The xml file

```
<~~store~~ person>
        <name> John Doe </name>
        <age> 30 </age>
        <city> New York </city>
</person>
```

○ XSL file

```
<xsl:stylesheet version = "1.0" xmlns:xsl = " http://www.
                                          w3. org /1999/
                                          XSL /Transform">

    <xsl:template match = "/" >
        <html>
            <body>
                <p>Name: <xsl: value of select = " person/
                                   name " /> </p>
                <p >Age: <xsl :value -of select = " person/age"/>
            <body>                                        </p>
        <html>
    </xsl:template>
</xsl: stylesheet>
```

Q4. What is the need of XML?

Ans. · XML is basically a way to structure information in a standard, readable way.

· Since it's easily read by humans, it's easy to work with when you're programming.

· Since it's standard, there's plenty of support from all the big programming languages.

· They generally have built in functionality for working with things like XML and JSON

· It removes two constraints which were holding back web developments:

1. Dependence on a single, inflexible document type (HTML) which was being much abused for tasks it was never designed for.

2. The complexity of full SGML, whose syntax allows many powerful but hard-to-program options.

· XML allows many powerful but hard-to-program options.

· XML allows the flexible development of user defined document types.

· It provides a robust, non-proprietary, persistent, and verifiable file format for the storage and transmission of text and data both on and off the web and it removes the more complex options of SGML, making it easier to program for.

· The main purpose of XML is to manage information and it does this very well.

· There are numerous tools available to support this purpose, many of which are XML based such as XSLT.