Exam.		Regular	
Level	BE	Full Marks	80
Programme	BCT	Pass Marks	32
Year / Part	IV / II	Time	3 hrs.

Subject: - XML: Foundation Techniques and Applications *(Elective III) (CT78505)*

✓ Candidates are required to give their answers in their own words as far as practicable.
✓ Attempt *All* questions.
✓ The figures in the margin indicate *Full Marks*.
✓ Assume suitable data if necessary.

1. Write down a valid XML document and explain its validity based on a DTD. Make some light on usage areas of XML. [6+3]

2. Differentiate XML attributes and elements. Design a well-formed XML document listing the students in your class with their address and contact no. [4+4]

3. What is X-path and XSLT? Show how they are used together along with examples. [3+4]

4. What are the applicable areas of XML as database? Why is XML database more preferred over relational database in those areas? [4+4]

5. What is X query. Explain FLWOR. Write a X query to select a contact number of second student from the XML document you prepared in question 2. [3+2+4]

6. What is RDF scheme? Write a sample RDF schema. [2+3]

7. What is Sematic Web Layer cake, Explain. [6]

8. What is soap? Write are its advantages and disadvantages. [3+5]

9. What is WSDL? Explain its structure. [6]

10. What is XBRL? Discuss applications of XBRL. [4+3]

11. Prepare a case study highlighting the benefits of XML based application in an education sector. [7]

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1. Discuss history of XML with its goal. [4]

2. Design an XML document with imaginary data to describe a cd collection. The cd collection may have one or more cd records. Each cd has a Name, Artists, Released Year and Price. Artist Name consists of First Name, Middle Name (optional) and Last Name. Artists can be a band or a single artist. Create a XSL template to generate an html document which displays the contents of the designed XML document in a tabular structure. [3+5]

3. Explain what is DTD. How is XML schema better than DTD? [2+3]

4. Differentiate XML database and relational database. Describe working of a SAX parser. [2+5]

5. Explain in Brief about the FLWOR expressions in XQuery with suitable examples. [6]

6. What is XSLT? Describe different ways in which we can use XSLT. [2+4]

7. Use the following XML document to write down XPath expressions mentioned below: [6]

```
<Employees>
    <Employee>
        <FirstName>Deepak</First Name>
        <LastName>Thapa</LastName>
        <Salary>25000</Salary>
    </Employee>
    <Employee>
        <FirstName>Rajib</FirstName>
        <LastName>Gurung</LastName>
        <Salary>22000</Salary>
    </Employee>
    <Employee>
        <FirstName>Richa</FirstName>
        <LastName>Shakya</LastName>
        <Salary>32000</Salary>
    </Employee>
</Employee>
```

    a) Select FirstName of employees with salary greater than 23000
    b) Select first two Employees
    c) Select the last Employee

8. What is RDF? List the container elements used in RDF. [3+2]

9. Explain the main aspects of the semantic web. [6]

10. What is Soap? Describe its structure. [7]

11. Describe WSDL and its document structure? [7]

12. Discuss the various applications of XML with examples. [7]

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1. What is XML? Explain in brief the history of XML. [2+4]

2. Create a well formed XML document based on the DTD mentioned below: [6]

```
< ! ELEMENT TVSCHEDULE (CHANNEL+) >
< ! ELEMENT CHANNEL (BANNER, DAT+) >
 < ! ELEMENT BANNER (#PCDATA) >
  < ! ELEMENT DAY (DATE, (HOLIDAY | PROGRAMSLOT+)+) >
< ! ELEMENT HOLIDAY (#PCDATA) >
< ! ELEMENT DATE (#PCDATA) >
< ! ELEMENT PROGRAMSLOT (TIME, TITLE, DESCRIPTION?) >
< ! ELEMENT TIME (#PCDATA) >
< ! ELEMENT TITLE (#PCDATA) >
< ! ELEMENT DESCRIPTION (#PCDATA) >


< !ATTLIST TVSCHEDULE NAME CDATA # REQUIRED >
 < !ATTLIST CHANNEL CHAN CDATA #REQUIRED >
  < !ATTLIST PROGRAMSLOT VTR CDATA #IMPLIED >
< !ATTLIST TITLE LANGUAGE CDATA #IMPLIED
] >
```

3. Write an example of XML document highlighting Syntax. Distinguish valid and well formed XML document. [2+3]

4. Briefly describe how DOM parser and SAX parser work. Explain the conditions when you would use them. [4+3]

5. Compare XQuery and XSLT. What is a FLWOR expression? [4+2]

6. Compare XML enabled databases and Native XML databases. [6]

7. What is XPath? Describe using an XML tree example. Illustrate how it is used in XSLT along with an example. [2+2+2]

8. What is Linked Data? Mention the 4 basic principles of Linked Data. [2+4]

9. What is OWL and what are its sublanguages? [5]

10. What are Web Services? Mention the uses of Web Services. [2+4]

11. Explain the Header, Body and Fault elements of SOAP. What is the role of WSDL? [6+2]

12. What is XBRL? Write about XBRL instance? [6]

13. Prepare a case study describing a real world scenario where XML based application will be of great benefit. [7]