UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2017

Program: BTech- CSE CCVT+O SS	Semester – V
Subject (Course): XML programming	Max. Marks : 100
Course Code : CSEG 359/ CSIB313	Duration : 3 Hrs

No. of page/s:2

Section-A: Answer all the questions and each question carries equal marks (4x5=20 Marks)

1. Define following XML Terminologies: (5*1=5 Mark)
   - a. Attribute
   - b. Cascading Style Sheet (CSS)
   - c. XSL
   - d. Notations
   - e. Processing Instructions

2. Why must the elements in XML be properly nested? Define entity references in xml?

3. Draw **XML Tree Structure** of following document

```
<?xml version="1.0" encoding="UTF-8"?>
<bookstore>
 <book category="cooking">
  <title lang="en">Everyday Italian</title>
  <author>Giada De Laurentiis</author>
  <year>2005</year>
  <price>30.00</price>
 </book>
 <book category="children">
  <title lang="en">Harry Potter</title>
  <author>J K. Rowling</author>
  <year>2005</year>
  <price>29.99</price>
 </book>
 <book category="web">
  <title lang="en">Learning XML</title>
  <author>Erik T. Ray</author>
  <year>2003</year>
  <price>39.95</price>
 </book>
</bookstore>
```

4. In XML how can the user create code which contains content that would be ignored by the parser? Show with the help of example.

Section-B: Answer all the questions each question carries equal marks   (4x10=40 Marks)

5. Compare the following: (4*2.5=10 Marks)
   - a) DTD and XML Schema
   - b) CDATA and PCDATA
   - c) Well-formed and Valid XML documents
   - d) XML and SQL

6. What is the origin of CSS? How can you integrate CSS on web page?

7. Can we use CSS in XML? How it is different from XSL. Give Examples?

8. Write down XML DTD of following Schema:

```
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema
xmlns:xs="http://www.w3.org/2001/XMLSchema"
elementFormDefault="qualified">
<xs:element name="catalog">
<xs:complexType>
<xs:sequence>
<xs:element ref="section"/>
      <xs:attribute name="id" use="required"
      type="xs:ID"/>
      </xs:complexType>
      </xs:element>
      <xs:element name="varietal"
      type="xs:string"/>
      <xs:element name="vintage"
      type="xs:integer"/>
```

`</xs:sequence>`
`</xs:complexType>`
`</xs:element>`
`<xs:element name="section">`
`<xs:complexType>`
`<xs:sequence>`
`<xs:element minOccurs="0"`
`maxOccurs="unbounded" ref="distributor"/>`
`<xs:element minOccurs="0"`
`maxOccurs="unbounded" ref="region"/>`
`<xs:element minOccurs="0"`
`maxOccurs="unbounded" ref="winery"/>`
`<xs:element maxOccurs="unbounded" ref="wine"/>`
`>`
`</xs:sequence>`
`<xs:attribute name="subject" use="required">`
`<xs:simpleType>`
`<xs:restriction base="xs:token">`
`<xs:enumeration value="Wines"/>`
`</xs:restriction>`
`</xs:simpleType>`
`</xs:attribute>`
`</xs:complexType>`
`</xs:element>`
`<xs:element name="wine">`
`<xs:complexType>`
`<xs:sequence>`
`<xs:element ref="name"/>`
`<xs:element ref="varietal"/>`
`<xs:element ref="vintage"/>`
`<xs:element ref="winery"/>`
`<xs:element ref="distributor"/>`
`<xs:element ref="bottlesize"/>`
`<xs:element ref="description"/></xs:sequence>`
	`<xs:element name="bottlesize"`
	`type="xs:NMTOKEN"/>`
	`<xs:element name="description"`
	`type="xs:string"/>`
	`<xs:element name="distributor">`
	`<xs:complexType mixed="true">`
	`<xs:attribute name="id" type="xs:ID"/>`
	`<xs:attribute name="name"/>`
	`</xs:complexType>`
	`</xs:element>`
	`<xs:element name="region">`
	`<xs:complexType mixed="true">`
	`<xs:attribute name="name"/>`
	`</xs:complexType>`
	`</xs:element>`
	`<xs:element name="winery">`
	`<xs:complexType mixed="true">`
	`<xs:choice minOccurs="0"`
	`maxOccurs="3">`
	`<xs:element ref="name" maxOccurs="1"/>`
	`<xs:element ref="region" maxOccurs="1"/>`
	`>`
	`<xs:element ref="country"`
	`maxOccurs="1"/>`
	`</xs:choice>`
	`<xs:attribute name="id" type="xs:ID"/>`
	`</xs:complexType>`
	`</xs:element>`
	`<xs:element name="country"`
	`type="xs:string"/>`
	`<xs:element name="name"`
	`type="xs:string"/>`
	`</xs:schema>`

Section-C: Answer all the questions each question carries equal marks   (2x20=40 Marks)

9. A. Explain the transformation process of XSLT processor. Give some elements that are contained in <xsl:stylesheet>? Show how <xsl:template> is used.   (10 marks)

    B. Write xml for the Student details and then make an XSLT file to show its data in the proper table format in the browser. Describe various predicates used in XPath? Differentiate between the following XPath-

    /book/entry[@id = "aa"]   and   /book//entry[@id = "aa"]   (10 Marks)

10. A. What is AJAX? What are the advantages and disadvantages of AJAX?   (10 Marks)

    B. Define a web service and explain its architecture in detail. Also define the various components of web services.   (10 Marks)

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Section-A: Answer all the questions and each question carries equal marks (4x5=20 Marks)

1. How are documents accessed and manipulated in XML? Explain predicates in XPath with examples?
2. Describe the usage and syntax of PIs in xml. What is the requirement of prefix in namespace?
3. What is a protocol? Explain HTTP in detail. Also give difference between GET and POST method.
4. Is following XML Document is well-formed? If not, then find out the errors:

       <game>
       <poker type="Omaha Hi Lo"/>
       <players>
       <player standing="17">Denis Ethier</player1>
       <player standing="23">Nancy Mallett</player>
       <player3 standing="112">Kim Beaver</player>
       <player standing="411">Leslie Thomas</player4>
       <player standing="517">Leatta Welch</player>
       <player standing="711">Davie Dilts</payer>
       <player standing="720">Juli Allentine</player>
       <player standing="809">Riley Dillon</players>
       <player standing="905">Nadia Grace</player>
       <player standing="1217">Eddie Cidade<player>
       <player standing="2741">Pamela Harris</player>
       <player standing="2977">Bernard Aslan</player>
       </players>
       <rules src="play.pdf >
       </poker>
       </Game>

Section-B: Answer all the questions each question carries equal marks (4x10=40 Marks)

5. Define Parser? What DOM Parser returns? Name some of the parsers which are commonly used to parse XML documents. Also differentiate between DOM and SAX Parser.

6. What is the function of XSLT? Write a program to use the Stylesheet elements and show the output in the HTML?
7. What is CSS. Discuss few CSS Essentials. Give some benefits of CSS.
8. Define the role of <xsl:value-of> element and <xsl:choose> element in XSLT and write an example of Library catalog which is fetching the data such as author, ISBN, Price etc. of at least two book records from xml file.

Section-C: Answer any two questions each question carries equal marks   (2x20=40 Marks **)**
9. Define Schema in xml. Explain how XSD substitution works. How do we block Element Substitution using xsd. Write the schema and xml document satisfying the following requirements and validate it:
   i. There are two account types: checking and savings accounts
   ii.   The account id is unique in 'accounts'
   iii.   The customer id is unique in 'customers'
   iv.   'c_id' refers to customers and 'ac_id' refers to accounts
   v.   The account balance must be greater than 5000
   vi.   Use inheritance for checking and savings accounts by deriving from a common account type   (20 Marks)

Or

Define DTD and its attribute types and values. Create the DTD file with the following constraints:
   a. Library has any number of books and members
        i. More than one book and member is possible
   b. Books has the following elements
           Id, name, author, ISBN
   • id, name, author are mandatory fields. More than one author and ISBN number can be possible.
   c. Member has the following elements
      Id, password, name, age, email, phoneNumber, panNumber, passportNumber
   • id, password, name, age fields are mandatory
   • email is optional. maximum one email is allowed
   • more than one phoneNumber is allowed.
   • (passportNumber, panNumber) either this or that is allowed only once
   • hightlight emailId, name and author with different color
Create the XML document for at least 5 books and 5 members. Check the XML document for well formness and validity. Write the different variations of the XML document.   (20 Marks)

10) A. Define Ajax. What are the advantages and disadvantages of Ajax? Describe all the technologies used by Ajax? Briefly explain functioning of Ajax with labelled figures.   (10 marks)
   B. Define a web service? Describe web service architecture in detail. Also explain the important technologies used in creating a web service.   (10 marks)