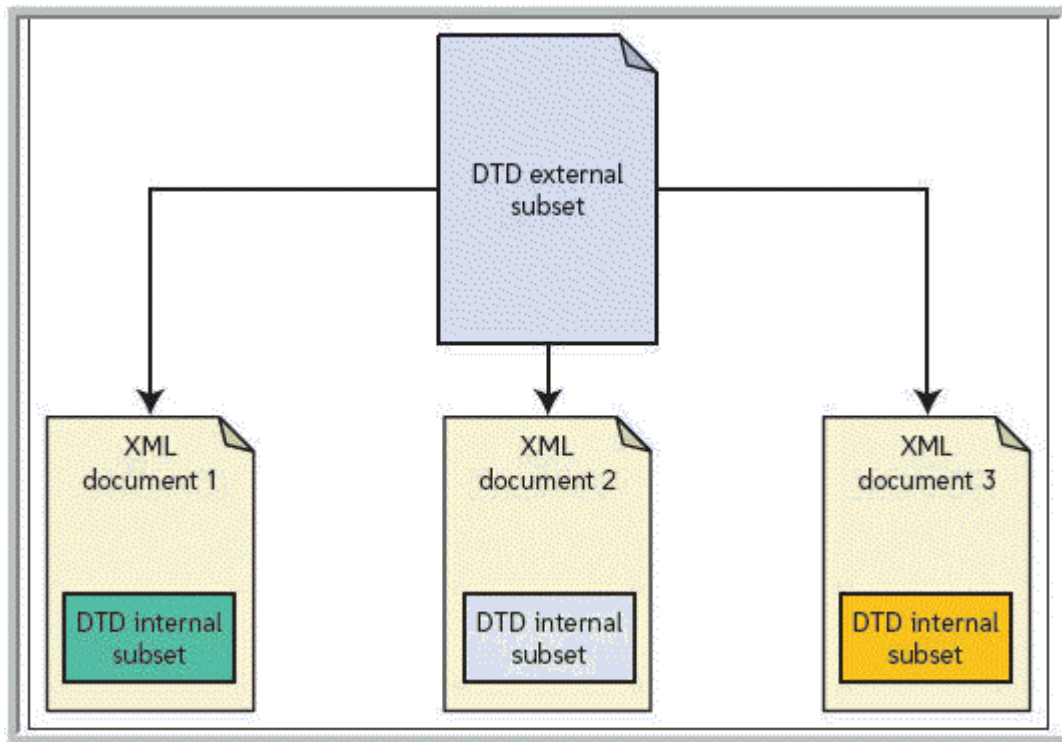Name:_____ Class:_____ Date:_____

Tutorial 2: Validating Documents with DTDs

1. One way to create a valid document is to design a document type definition, or DTD, for the document.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 71

2. As shown in the accompanying figure, the external subset would define some basic rules for all of the documents, and the internal subset would define rules that are specific to each document.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 73

3. Generally, elements contain parsed character data or child elements.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 76

4. An XML element is not limited to either parsed character data or child elements.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 83

Tutorial 2: Validating Documents with DTDs

5. Attribute-list declarations can be located anywhere within the document type declaration.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 86

6. Attribute values do not allow you to control the format of the character data.
    a. True
    b. False
ANSWER: False
REFERENCES: XML 89

7. To test for validity, an XML parser must be able to compare the XML document with the rules established in the DTD.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 97

8. Entities can reference content found either in an external file or within the DTD itself.
    a. True
    b. False
ANSWER: True
REFERENCES: XML 106

9. For a DTD to validate either binary data, such as images or video clips, or character data that is not well formed, you need to work with parsed entities.
    a. True
    b. False
ANSWER: False
REFERENCES: XML 117

10. In a valid document, at least two elements must be declared in the DTD.
    a. True
    b. False
ANSWER: False
REFERENCES: XML 75

11. A DTD can be used to enforce a specific data structure on document content.
ANSWER: True
REFERENCES: XML 71

Tutorial 2: Validating Documents with DTDs

```
<!DOCTYPE customers
[

]>
<customers>
   <customer custID="cust201">
      <name title="Mr.">John Michael</name>
      <address>
         <![CDATA[
         41 West Plankton Avenue
         Orlando, FL  32820
         ]]>
      </address>
      <phone>(407) 555-3476</phone>
      <email>jk@example.net</email>
      <orders>
         <order orderID="orl089" orderBy="cust201">
```
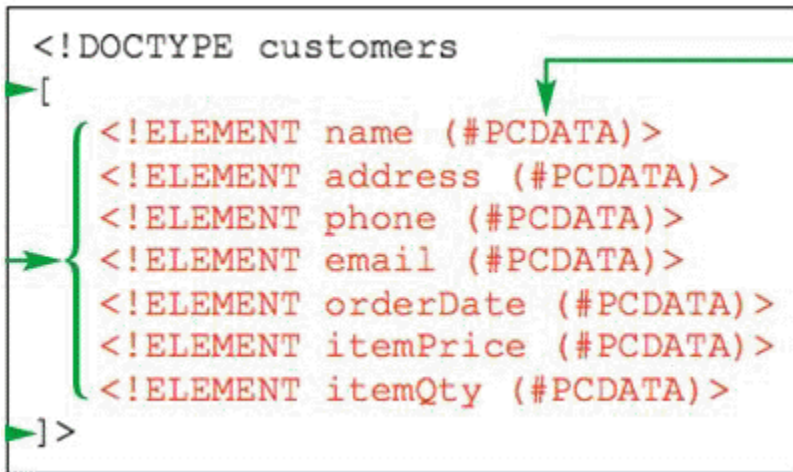
12. The DOCTYPE declaration has to be added to a document <u>epilog</u> as shown in the accompanying figure.
ANSWER: False - prolog
REFERENCES: XML 75

```
<!DOCTYPE customers
[
   <!ELEMENT name (#PCDATA)>
   <!ELEMENT address (#PCDATA)>
   <!ELEMENT phone (#PCDATA)>
   <!ELEMENT email (#PCDATA)>
   <!ELEMENT orderDate (#PCDATA)>
   <!ELEMENT itemPrice (#PCDATA)>
   <!ELEMENT itemQty (#PCDATA)>
]>
```

13. An element declaration employing the `#PCDATA` content model shown in the accompanying figure does not allow for <u>child</u> elements.
ANSWER: True
REFERENCES: XML 77

14. A modifying symbol is placed directly <u>before</u> the element it modifies.
ANSWER: False - after
REFERENCES: XML 80

15. It is best not to work with <u>mixed</u> content if you want a tightly structured document.
ANSWER: True
REFERENCES: XML 83

Tutorial 2: Validating Documents with DTDs

16. If a processor encounters more than one declaration for the same attribute, it ignores the <u>first</u> statement.
ANSWER: False - second
REFERENCES: XML 86

17. An attribute declared using the <u>NAME</u> token must have a value equal to the value of an ID attribute located somewhere in the same document.
ANSWER: False - IDREF
REFERENCES: XML 93

18. The <u>#FIXED</u> attribute default is used to indicate that the use of an attribute is optional.
ANSWER: False - #IMPLIED
REFERENCES: XML 95

19. An entity whose content is found within the DTD is known as a(n) <u>external</u> entity.
ANSWER: False - internal
REFERENCES: XML 104

20. A(n) <u>notation</u> must supply a name for the data type and provide clues about how applications should handle the data.
ANSWER: True
REFERENCES: XML 117

21. A(n) _____ is a collection of rules that define the content and structure of an XML document.
    a. data structure   b. DTD
    c. XMLNS   d. validity glossary
ANSWER: b
REFERENCES: XML 71

22. One way to create a valid document is to design a(n) _____ for the document.
    a. data structure   b. DTD
    c. XMLNS   d. validity glossary
ANSWER: b
REFERENCES: XML 71

23. A DTD is entered into the document in a statement called a document _____ declaration.
    a. basis   b. element
    c. index   d. type
ANSWER: d
REFERENCES: XML 71

Tutorial 2: Validating Documents with DTDs

```
<!DOCTYPE customers
[

]>
<customers>
   <customer custID="cust201">
      <name title="Mr.">John Michael</name>
      <address>
         <![CDATA[
         41 West Plankton Avenue
         Orlando, FL  32820
         ]]>
      </address>
      <phone>(407) 555-3476</phone>
      <email>jk@example.net</email>
      <orders>
         <order orderID="orl089" orderBy="cust201">
```

24. The DOCTYPE declaration has to be added to the document _____, after the XML declaration and before the document's root element, as shown in the accompanying figure.
    a. prolog   b. epilog
    c. body   d. any of the above
ANSWER: a
REFERENCES: XML 71

25. How many DOCTYPE declarations can there be in an XML document?
    a. 1   b. 2
    c. 3   d. There is no limit.
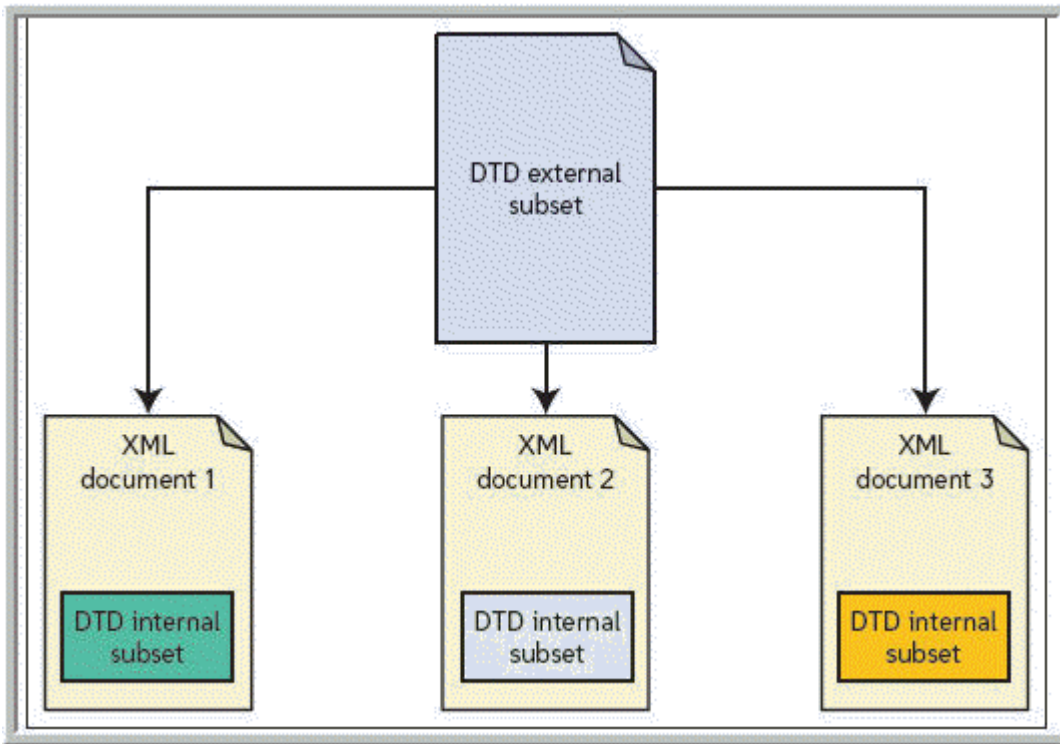*ANSWER:*   a
REFERENCES: XML 71

26. You can divide a DTD into _____ parts.
    a. two   b. three
    c. five   d. seven
ANSWER: a
REFERENCES: XML 71

Tutorial 2: Validating Documents with DTDs

27. Which of the following is a part into which a DTD like the one in the accompanying figure can be divided?
     a. internal subset   b. system identifier
     c. root element   d. public identifier
ANSWER: a
REFERENCES: XML 71

28. Which of the following is a part into which a DTD like the one in the accompanying figure can be divided?
     a. element declaration   b. strict declaration
     c. external subset   d. root element
ANSWER: c
REFERENCES: XML 71

29. The locations of external subsets like that shown in the accompanying figure can be defined using _____ types of identifiers.
     a. two   b. three
     c. four   d. six
ANSWER: a
REFERENCES: XML 71

30. Which of the following is a type of identifier for the location of an external subset like the one in the accompanying figure?
     a. internal   b. undeclared
     c. qualified   d. system
ANSWER: d
REFERENCES: XML 71

Tutorial 2: Validating Documents with DTDs

31. To create a parsed entity that references content from an external file using a system _____, you use the declaration `<!ENTITY entity SYSTEM ? "uri?">`.

    a. identifier   b. qualifier

    c. index   d. locator

ANSWER: a

REFERENCES: XML 107

32. Most standard XML vocabularies have _____ identifiers.

    a. public   b. strict

    c. system   d. master

ANSWER: a

REFERENCES: XML 72

33. An element _____ declaration specifies an element's name and indicates what kind of content the element can contain.

    a. content   b. model

    c. type   d. detail

ANSWER: c

REFERENCES: XML 75

34. An element declaration can specify which of the following?

    a. an element's name

    b. what kind of content the element can contain

    c. the order in which elements appear in the document

    d. All of the these are correct.

ANSWER: d

REFERENCES: XML 75

35. Element names can contain which of the following?

    a. reserved symbols   b. spaces

    c. numbers   d. All of these are correct.

ANSWER: c

REFERENCES: XML 75

36. The `content-model` value can be one of _____ specific keywords or one of two content descriptions.

    a. five   b. four

    c. three   d. two

ANSWER: c

REFERENCES: XML 76

37. The _____ content model is reserved for elements that store no content.

    a. NULL   b. NONE

    c. EMPTY   d. VOID

ANSWER: c

Tutorial 2: Validating Documents with DTDs

REFERENCES: XML 76

38. The _____ value for the content model in an element declaration means an element cannot store any content.
    a. EMPTY   b. NULL
    c. NONE   d. mixed
ANSWER: a
REFERENCES: XML 76

39. The _____ value for the content model in an element declaration means the element can contain only parsed character data.
    a. parsed   b. mixed
    c. #PCDATA   d. elements
ANSWER: c
REFERENCES: XML 76

40. The _____ value for the content model in an element declaration means the element can contain both parsed character data and child elements.
    a. mixed   b. elements
    c. #PCDATA with sequence   d. BOTH
ANSWER: c
REFERENCES: XML 76

41. The _____ content model allows an element to store any type of content.
    a. OPEN   b. mixed
    c. #PCDATA   d. ANY
ANSWER: d
REFERENCES: XML 76

42. The declaration _____ would permit this element in an XML document: <name>Lea Ziegler</name>.
    a. <!ELEMENT products (#CHAR)>   b. <!ELEMENT products ALL>
    c. <!ELEMENT products EMPTY>   d. <!ELEMENT name (#PCDATA)>
ANSWER: d
REFERENCES: XML 77

43. In a DTD, a _____ symbol specifies the number of occurrences of each element.
    a. specifying   b. quantifier
    c. count   d. modifying
ANSWER: d
REFERENCES: XML 80

44. The _____ symbol indicates that an element occurs at least once.
    a. ^   b. ?
    c. +   d. &
ANSWER: c

Tutorial 2: Validating Documents with DTDs

REFERENCES: XML 80

45. While very flexible, elements with _____ content do not add much defined structure to a document.
    a. dynamic   b. mixed
    c. static   d. integrated
ANSWER: b
REFERENCES: XML 83

46. When the _____ symbol is used with a choice list, the element can contain any number of occurrences of child elements or PCDATA, or it can contain no content at all.
    a. +   b. *
    c. ?   d. ^
ANSWER: b
REFERENCES: XML 83

47. Which of the following is accomplished by an attribute-list declaration?
    a. It lists the names of all the attributes associated with a specific element.
    b. It specifies the data type of each attribute.
    c. It indicates whether each attribute is required or optional.
    d. All of these are correct.
ANSWER: d
REFERENCES: XML 86

48. The attributes of the attribute value type _____ contain a list of entities separated by white space.
    a. `ENTITY`   b. enumerated list
    c. `ENTITIES`   d. `ID`
ANSWER: c
REFERENCES: XML 90

49. The attributes of the attribute value type _____ contain an accepted XML name.
    a. `ID`   b. `NMTOKEN`
    c. `IDREF`   d. `ENTITY`
ANSWER: b
REFERENCES: XML 90

50. The syntax for creating a conditional section is _____.
    a. `<![keyword[`   b. `<![keyword[`
      `declarations`   `declarations`
      `]}>`   `}}>`
    c. `</[keyword[`   d. `<![keyword[`
      `declarations`   `declarations`
      `]]>`   `]]>`
ANSWER: d
REFERENCES: XML 116

Tutorial 2: Validating Documents with DTDs

51. Any attribute that has been declared by the data type ID is a candidate for an ID _____.
    a. property   b. element
    c. link   d. reference
ANSWER: d
REFERENCES: XML 93

52. Once an ID value has been declared in a document, other attribute values can refer to it using the _____ token.
    a. name   b. entity
    c. IDREF   d. value
ANSWER: c
REFERENCES: XML 93

53. The NMTOKEN data types cannot contain _____.
    a. hyphens   b. colons
    c. white space   d. Any of the above.
ANSWER: c
REFERENCES: XML 94

54. The _____ attribute default means that the attribute must appear with every occurrence of the element.
    a. `#MANDATED`   b. `#FIXED`
    c. `#REQUIRED`   d. `#IMPLIED`
ANSWER: c
REFERENCES: XML 95

55. To test for validity, an XML parser must be able to compare your XML document with the _____ rules you set up in the DTD.
    a. validity   b. integration
    c. persistence   d. interpolation
ANSWER: a
REFERENCES: XML 97

56. If an entity's content is found within the DTD, the entity is known as a(n) _____ entity.
    a. internal   b. persistent
    c. contained   d. consistent
ANSWER: a
REFERENCES: XML 106

57. An entity that references content that cannot be interpreted by the XML parser is a(n) _____ entity.
    a. internal   b. well-formed
    c. unparsed   d. dynamic
ANSWER: c
REFERENCES: XML 106

58. Content referenced by an entity can be either _____.

Tutorial 2: Validating Documents with DTDs

a. persistent or consistent   b. parsed or unparsed

c. static or dynamic   d. well-formed or unique

ANSWER: b

REFERENCES: XML 106

59. XML parsers interpret the _____ symbol as a reference to another entity and attempt to resolve the reference.

a. `&`   b. `%`

c. `#`   d. `!`

ANSWER: a

REFERENCES: XML 109

60. The _____ symbol is used for inserting parameter entities.

a. `&`   b. `%`

c. `#`   d. `!`

ANSWER: b

REFERENCES: XML 113

61. The chunks into which a DTD can be broken with parameter entities are known as _____.

a. components   b. blurbs

c. links   d. modules

ANSWER: d

REFERENCES: XML 113

Case-based Critical Thinking Questions
Case 2-1
Casey is using XML to store information about the students in the science classes that he teaches. He wants to design a DTD that he can use to validate the XML documents that he uses for this purpose, and he comes to you for help.

62. You tell Casey that he must declare the DTD using a DOCTYPE statement. Where should the DOCTYPE go?

a. before the XML declaration

b. within the XML declaration

c. after the XML declaration and before the document's root element

d. after the document's root element

ANSWER: c

REFERENCES: XML 71

63. Casey wants to include a declaration for an element named "note" that can contain any type of content. Which of the following is an appropriate element declaration for this element?

a. `<!ELEMENT note (#PCDATA)>`   b. `<!ELEMENT note>`

c. `<!ELEMENT note ALL>`   d. `<!ELEMENT note ANY>`

ANSWER: d

REFERENCES: XML 76

64. Casey next wants to write a declaration for an element named "advanced" that he will use to record the fact that a student is advanced. This element will not contain any content. Which of the following is an appropriate element

Tutorial 2: Validating Documents with DTDs

declaration for this element?

a. `<!ELEMENT advanced NONE>` b. `<!ELEMENT advanced EMPTY>`

c. `<!ELEMENT advanced>` d. `<!ELEMENT advanced NIL>`

ANSWER: b

REFERENCES: XML 76

65. Casey needs to declare an "address" element that can be used to store a student's address. If he intends to store the address as parsed character data, which of the following is an appropriate declaration for this element?

a. `<!ELEMENT address (#PCDATA)>` b. `<!ELEMENT address CHAR>`

c. `<!ELEMENT address TEXT>` d. `<!ELEMENT address CDATA>`

ANSWER: a

REFERENCES: XML 77

66. After you teach Casey about declarations for elements with child elements, he constructs the element declaration `<!ELEMENT class ((seminar | lesson | workshop), time?)>`. Given this declaration, which of the following is NOT a valid "class" element?

a. `<class><seminar>Beginner Drawing</seminar><time>Mon. 3-4</time></class>`

b. `<class><lesson>One-on-One Painting</lesson><time>Tues. 11-noon</time></class>`

c. `<class><seminar>Oil Painting</seminar><lesson>brushstrokes</lesson></class>`

d. `<class><workshop>Working with Clay</workshop></class>`

ANSWER: c

REFERENCES: XML 79

Case-based Critical Thinking Questions
Case 2-2
Rosalind wants to add attribute declarations to her DTD, and she turns to you for information about the possible attribute types.

67. You tell Rosalind about the CDATA attribute type. Which of the following attribute values would NOT be allowed for an attribute of this type?

a. 25.99 b. New York, NY

c. Bob & Jenny d. yellow

ANSWER: c

REFERENCES: XML 90

68. Rosalind wants to define a required attribute called "semester" of an element named "course." She wants to ensure that this attribute takes on one of three values: fall, spring, or summer. Which type of attribute should she use?

a. CDATA b. an enumerated type

c. a tokenized type d. a value-list type

ANSWER: b

REFERENCES: XML 90

69. You help Rosalind write the declaration of the "semester" attribute described in the previous problem. Which of the following is an appropriate declaration for this attribute?

Tutorial 2: Validating Documents with DTDs

    a. `<!ATTLIST course semester (fall | spring | summer) #REQUIRED>`

    b. `<!ATTLIST course semester (fall, spring, summer) #REQUIRED>`

    c. `<!ATTLIST semester course (fall | spring | summer) #REQUIRED>`

    d. `<!ATTLIST semester course (fall, spring, summer) #REQUIRED>`

ANSWER: a

REFERENCES: XML 90

70. Rosalind wants to declare a "coursenum" attribute, the values of which will be unique within the document. Which attribute type should she use?

    a. `CDATA`   b. `UNIQUE`

    c. `ID`   d. `IDREF`

ANSWER: c

REFERENCES: XML 90

71. You help Rosalind write the declaration of an attribute named "credits" of an element named "course." This optional attribute should contain character data, and a value of 4 should be used if an attribute value is not specified. Which of the following is an appropriate declaration of this attribute?

    a. `<!ATTLIST credits course CDATA default="4">`

    b. `<!ATTLIST course credits CDATA default="4">`

    c. `<!ATTLIST credits course CDATA "4">`

    d. `<!ATTLIST course credits CDATA "4">`

ANSWER: d

REFERENCES: XML 90

72. External DTDs work the same way as _____ style sheets.

    a. dynamic   b. external

    c. embedded   d. inline

ANSWER: b

REFERENCES: XML 74

Tutorial 2: Validating Documents with DTDs

```
<!DOCTYPE customers
[

]>
<customers>
    <customer custID="cust201">
        <name title="Mr.">John Michael</name>
        <address>
            <![CDATA[
            41 West Plankton Avenue
            Orlando, FL  32820
            ]]>
        </address>
        <phone>(407) 555-3476</phone>
        <email>jk@example.net</email>
        <orders>
            <order orderID="orl089" orderBy="cust201">
```

73. A DOCTYPE declaration like the one in the accompanying figure is also known as a(n) _____.
ANSWER: DTD
                 document type declaration
                 DTD (document type declaration)
                 document type declaration (DTD)
REFERENCES: XML 71

74. In a(n) _____ subset, the declarations are placed in an external file that is accessed from the XML document.
ANSWER: external
REFERENCES: XML 71

75. A(n) _____ is added to the DOCTYPE declaration to provide information about the DTD to the XML parser.
ANSWER: public identifier
                 formal public identifier
REFERENCES: XML 72

76. A(n) _____ specifies an element's name and indicates what kind of content it can contain.
ANSWER: element declaration
                 element type declaration
REFERENCES: XML 75

77. A(n) _____ content model is a list of child elements that follow a defined order.
ANSWER: sequence
REFERENCES: XML 67

78. _____ content allows an element to contain both parsed character data and child elements.
ANSWER: Mixed
REFERENCES: XML 83

79. DTDs use more general numbering with a(n) _____ symbol, which specifies the number of occurrences of each

Tutorial 2: Validating Documents with DTDs

element.
ANSWER: modifying
REFERENCES: XML 80

80. Attributes that are limited to a set of possible values are known as _____ types.
ANSWER: enumerated
REFERENCES: XML 91

81. A(n) _____ associates the value of an attribute with a `<!NOTATION>` declaration that is inserted elsewhere in the DTD.
ANSWER: notation
REFERENCES: XML 92

82. _____ types are character strings that follow certain rules for format and content.
ANSWER: Tokenized
REFERENCES: XML 92

83. An attribute declared as a(n) _____ token must have a value equal to the value of an `ID` attribute located somewhere in the same document.
ANSWER: `IDREF`
REFERENCES: XML 93

84. _____ is ignored within a comment, so you can spread comment text over several lines without affecting DTD code.
ANSWER: White space
REFERENCES: XML 115

85. An attribute that contains a list of XML names, each separated by a blank space, can be defined using the _____ data type.
ANSWER: `NMTOKENS`
REFERENCES: XML 90

86. Because a DTD is not written in the XML language, XML _____ must support the syntax and language requirements needed to interpret DTD code.
ANSWER: parsers
REFERENCES: XML 121

87. DTDs do not support _____, and thus are of limited value in compound documents.
ANSWER: namespaces
REFERENCES: XML 121

88. Used in conjunction with an XML parser that supports data validation, a DTD can be used to accomplish what?
ANSWER: A DTD can be used to:

- Ensure that all required elements are present in a document
- Enforce a specific data structure on a document
- Prevent undefined elements from being used in a document

Tutorial 2: Validating Documents with DTDs

- Specify the use of element attributes and define their permissible values
- Define default values for attributes
- Describe how parsers should access non-XML or nontextual content

REFERENCES: XML 71

89. What are the five possible values for `content-model` in the element declaration?

ANSWER: The `content-model` value can be one of three specific keywords (`ANY`, `EMPTY`, `#PCDATA`), or one of two content descriptions (sequence, `#PCDATA` with sequence), as follows:

- `ANY`: The element can store any type of content or no content at all.
- `EMPTY`: The element cannot store any content.
- `#PCDATA`: The element can contain only parsed character data.
- Sequence: The element can contain only child elements.
- `#PCDATA` with sequence: The element can store both parsed character data and child elements

REFERENCES: XML 76

90. What are the limitations of mixed content elements? Under what circumstances should you not use them?

ANSWER: Because they are very flexible, elements with mixed content do not add much defined structure to a document. You can specify only the names of the child elements, and you cannot constrain the order in which those child elements appear or control the number of occurrences for each element. An element might contain only text or it might contain any number of child elements in any order. For this reason, it is best to avoid working with mixed content if you want a tightly structured document.

REFERENCES: XML 83

Identify the letter of the choice that best matches the phrase or definition.

a. general entity

b. unparsed entity

c. external entity

d. module

e. & symbol

f. internal entity

g. parameter entity

h. conditional section

i. DTDs

j. notation

REFERENCES: XML 106
                    XML 113
                    XML 113
                    XML 120
                    XML 106
                    XML 109
                    XML 118
                    XML 108
                    XML 106
                    XML 116

Name:_____   Class:_____   Date:_____

Tutorial 2: Validating Documents with DTDs

91. References content that is either nontextual or that cannot be interpreted by an XML parser
ANSWER: b

92. Used when you want to insert content into a DTD itself
ANSWER: g

93. The smaller chunks into which a DTD can be broken
ANSWER: d

94. Most standard vocabularies make these available online for inspection
ANSWER: i

95. Draws its content from an external file
ANSWER: c

96. Interpreted by XML parsers as a reference to another entity
ANSWER: e

97. This supplies a name for a data type and provides clues about how an application should handle the data
ANSWER: j

98. References content to be used within an XML document
ANSWER: a

99. Includes its content in the DTD
ANSWER: f

100. Enables you to divide a DTD into two parts: one interpreted by parsers, and one containing declarations that parsers ignore
ANSWER: h