RAJATRATA UNIVERSITY OF SRI LANKA
FACULTY OF APPLIED SCIENCES, MIHINTALE
B.Sc.(General) Degree in Information and Communication Technology
Second Year-Semester I Examination –Oct/Nov 2015

ICT2404- Multimedia and Web Technology

Answer All Questions Time 3Hours

Assume you are developing a simple web site for the faculty of Applied Sciences. The questions 1 to 4 are based on such a web site.

1.

i. State and give code for the new tags introduced in HTML5 to add multimedia in to web pages. (3 Marks)

ii. Construct a home page by using HTML 5 semantic tags for layout designing. You are requested to add :

- Three unordered list items of "Registration, Login and News " into nav area .
- Hyperlink to list item "Registration" which links to "registartion.html.
- Any text into article area.
- "header.gif" image into header area, width and height of the image are 475px and 45px respectively. (10 Marks)

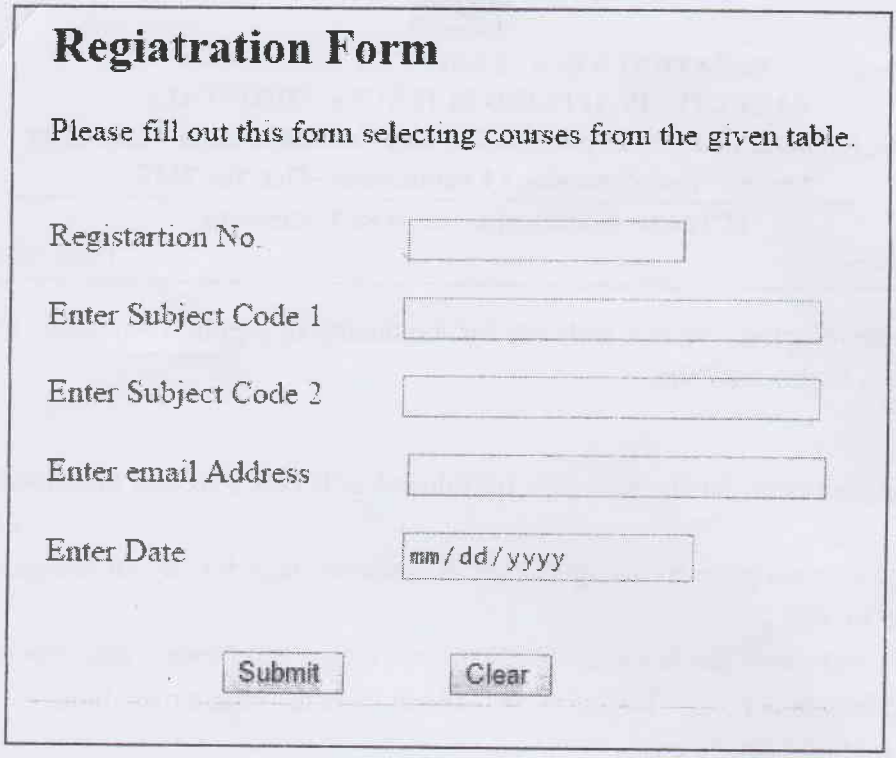
iii. Construct a "registration.html" page by adding the following table and the form for course registration.(Form data should submit to "form_regist.php" file which will be created later) (7 Marks)

(CSS or any other presentation attributes are not required)

Faculty of Applied Sciences

Available courses for the semester

Department	Course code	Status
Physical	COM2303	Optional
	COM2202	Compulsory
	ICT2404	Compulsory
Biological	BIO2202	Compulsory
	BIO2201	Optional
	BIO2404	Compulsory



2.

i. Explain (describe an each case with a simple example) how CSS can be used to provide a consistent visual design throughout:
   a) an entire website. (1 Marks)
   b) a single web page (1 Marks)

ii. Describe the following selectors with suitable examples:
   a) Class selector
   b) Pseudo class selector
   c) ID selector (1 Mark for each)

iii. Write CSS rules as an external CSS file to change the appearance of the above home page according to the follows specifications :
for the body tag :font size 13pt, font type Calibri, font color #00CC99,
for aside tag:
   left margin700px
   top margin 5px
   italic fonts and solid border (4 Marks)

iv. Write CSS rules to change the table contents in the " registration.html" file as follows:
   a. use "nth-of-type " selector to zebra striping each row of a table in deferent colours,
   b. change the table header background color into #000099.
   c. align COURSE CODE contents to center (8 Marks)

3.

i. There are three places where you can put your JavaScript in a web site . briefly explain each with suitable examples. (2 Marks)

ii. Briefly describe the client side validation and server side validation. (2 Marks)

iii. Identify the errors if any in the following JavaScript Code :

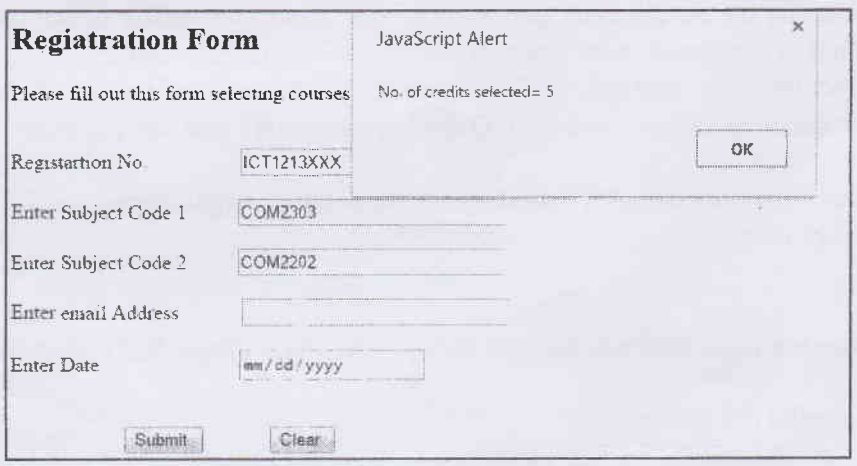
```
function ckeckfield
        {
        var em = document.forms[0],elements[3].value;
        var posA = em.indexOf(@)
        var posD = em.lastIndexOf(.);
        if (posA < 1  and   posD < posA+2  or  posD+2 >=em.length)
                {
                        alert("invalid data");
                }
        else
                alert("OK");

        return false;
```

After making the corrections, what would be the expected results when you enter the following data:

a. @rjt.lk
b. a@rjt.lk
c. sam@.lk (3 Marks)

iv. Add a JavaScript function to the above form in Question 1.iii to display the number of credits when you filling two subjects.(Notes: that the fifth character represents the credit rating of a course code. Use charAt function and onChange event handler to answer this question. The following screen shot is appeared when you try to fill next field).

(8 Marks)



4.

i. State reasons to prefer PHP among other server side scripts. (1Mark)

ii. Create an associative array to store three subject names and marks and to display all subject names and marks. (2 Marks)

iii. Explain PHP sessions using simple example. (4 Marks)

iv. The server has a database named COURSE, with a single table named COURSEREG. Table structure is given below.

COURSEREG	
regNo	varchar(10)
sub1	varchar(6)
sub2	vrchar(6)
Email	varchar(20)
dateOfReg	Date

(You may assume the web server and the database server are in the same machine)

a) Write code to connect to the database. (1 Marks)

b) Write code to store the details submitted from the form in the above question (1.iii) into the database. ("form_regist.php") (4 Marks)

c) Write code to retrieve and display (in an appropriate format) the details of all registered students in the database who were taken COM2303. Use mysql_fetch_array() function to answer this question. (8 Marks)

5.

i. State the basic characteristics of Multimedia systems (2 Marks)

ii. Compare the file formats of GIF and JPEG (2 Marks)

iii. State the required storage space for a 640x480px 24 bit color image. (1 Marks)

iv. Describe the followings:
   a. Colour Lookup Table (2 Marks)
   b. Raster images (2 Marks)

v. Describe the Sample rate and Sample size regard to quality of the sound
What is the sample rate normally used for FM quality sounds.
Calculate the storage space required to store 5 minutes CD quality sound file.(assume sample rate for CD quality is 44MHz and sample size is 16 bit) (2 Marks)

vi. Give two examples for **Lossless Compression Algorithms** and briefly describes one of them. (4 Marks)

6.

i. State the rules that you have to follow when you create XML documents. (2 Marks)

ii. Describe the followings:
   a. Attributes vs Sub elements (2 Marks)
   b. Namespace (2 Marks)

c. DTD vs Schema (2 Marks)

iii. Generate an appropriate sample valid XML document based on the given external DTD. (2 Marks)

vehicle.dtd

```
<!DOCTYPE vehicle [
  <!ELEMENT make (#PCDATA)>
  <!ELEMENT model (#PCDATA)>
  <!ATTLIST model doors (two | four) #required>
  <!ELEMENT year (#PCDATA)>
 <!ELEMENT fueType (#PCDATA)>
 <!ATTLIST fuelType fuel (petrol |diesel) #required>
  <!ELEMENT engine (#PCDATA)>
  <!ATTLIST engine transmission (manual | automatic) #required>
]>
```

iv.

XML schema - order.xsd

```
<?xml version="1.0" encoding="ISO-8859-1" ?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema">
        <xs:element name="order">
                <xs:complexType>
                        <xs:sequence>
                                <xs:element name="orderby" type="xs:string"/>
                                <xs:element name="shipto">
                                <xs:complexType>
                                        <xs:sequence>
                                                <xs:element name="address" type="xs:string"/>
                                                <xs:element name="country" type="xs:string"/>
                                        </xs:sequence>
                                </xs:complexType>
                                </xs:element>
                                <xs:element name="item" maxOccurs="unbounded">
                                        <xs:complexType>
                                                <xs:sequence>
                                                <xs:element name="itemNo" type="xs:string"/>
                                                <xs:element name="quantity" type="xs:positiveInteger"/>
                                                </xs:sequence>
                                        </xs:complexType>
                                </xs:element>
                        </xs:sequence>
                        <xs:attribute name="orderid" type="xs:string" use="required"/>
                </xs:complexType>
        </xs:element>
</xs:schema>
```

order.xml

```
<?XML version="1.0" encoding="ISO-8859-1"?>
<order orderid="2404"
       xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
       xsi:noNamespaceSchemaLocation="order.xsd">
       <orderBy> Sunil Perera </orderby>
       <shipto>
              <address>No12 </address>
              <address>Mihintale </address>
              <country>Sri Lanka</country>
       </shipto>
       <item>
              <itemNo>ABC1213</itemNo>
              <quantity>15.0</quantity>
       </item>
</order>
```

The order.xsd is used to write an order XML document. State whether the XML document is a **well formed XML** document, when validating against XML schema, if not identify all the errors and make the corrections. (5 Marks)