MANIPAL INSTITUTE OF TECHNOLOGY, MANIPAL 576104

(Constituent College of Manipal University)

SIXTH SEMESTER B.TECH. (IT) DEGREE END SEMESTER EXAMINATION MAY– 2016
SUBJECT: INTERNET TECHNOLOGY AND APPLICATIONS – ICT 302

TIME: 3 HOURS	04/05/2016	MAX. MARKS: 50

Instructions to candidates
- Answer any **FIVE FULL** questions.
- Missing data, if any, may be suitably assumed.

1A. Differentiate between flow layout and border layout in applets. Write an applet program to display the layout given in Figure Q.1A using border layout and buttons.
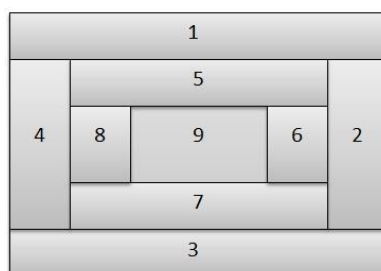

Figure Q.1A.

1B. Write a JavaScript which accepts a number as input and displays the number after inserting dashes (-) between each of two even numbers. For example if you accept 25468 from the user, the output should be 254-6-8.

1C. How is hash different from an array in Perl? Write the operations which can be performed on hash.

(5+3+2)

2A. Write a servlet to read a username and password from the user at the client side and validate the same (using regular expressions) at the server side and display an HTML page to the user whether the entered username and password are according to the conditions given below:
a) User name should be a valid email id.
b) Password should not start with an integer value
c) Password should contain atleast two special characters.
d) Password length should be between 6 and 10.

2B. Explain the different e-commerce models with suitable examples.

2C. Write an XSL stylesheet which displays the following XML in a HTML table format with the table title as Grocery List:

```
<?xml version="1.0"?>
  <grocery>
  <item>
       <name>milk</name>
       <price>$1.12</price>
       <quantity>8023</quantity>
       <image>milk.gif</image>
  </item>
  <item>
       <name>beans</name>
       <price>$0.69</price>
```

```
        <quantity>218</quantity>
        <image>beans.gif</image>
    </item>
    </grocery>
```

<div align="right">(5+3+2)</div>

3A. Write a menu driven VBScript to do the following.
    a) Find the factorial of a number entered by the user.
    b) Find the smallest of the three numbers entered by the user.

3B. Write a MathML for the following mathematical equation:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} + \int_{-\infty}^{\infty} e^{-x^2} dx$$

3C. Write an applet program that draws a checkerboard as shown in Figure Q.3C. Assume that the size of the applet is 160 by 160 pixels. Each square in the checkerboard is 20 by 20 pixels. The checkerboard contains 8 rows and 8 columns of squares. The squares are red and black in colour.
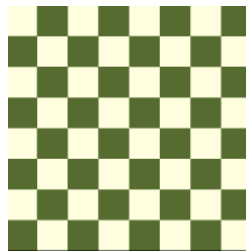

Figure Q.3C

<div align="right">(5+3+2)</div>

4A. Briefly explain the following with respect to HTML and CSS with suitable examples.
    a) Nested ordered list
    b) z-index
    c) Imagemap

4B. Write the output for the following Perl program.

```
@arr1 = (0,1,2,3,4);
@arr2 = ("zero","one","two","three","four");
unshift(@arr2,"hello");
pop(@arr2);
shift(@arr1);
print (@arr1);
@arr1=(5,6);
$ x=scalar(@arr2);
print (@arr1);
print (@arr2);
print lcfirst(uc($arr2[2]));
print $x;
print "\n";
$scalar = "The root has too many fruits and leaves";
$scalar =~ s/root/tree/;
$scalar =~ tr/has/HAR/;
print("\$scalar = $scalar\n");
```

4C. Explain the HTTPServlet class with respect to servlet.

5A. Write a JavaScript code that displays text "TEXT-GROWING" with increasing font size in the interval of 150ms in red colour, when the font size reaches 50pt it displays "TEXT-SHRINKING" in blue colour and the font size decreases to 5pt.

5B. Briefly explain the structure of a WSDL document.

5C. Write a perl regular expression to validate a mobile number where the mobile number starts with digit 9 and consists of ten digits. Also, write the output for the following Perl program.

```
my $str = '112133aabcddeffxyz335677';
$str =~ s/(.)\1/$1/g;
$str =~ s/\d{4}/hello/g;
print $str;
```

<div align="right">(5+3+2)</div>

6A. Write any two valid markup for the DTD given below.

```
<! ELEMENT collection(description, recipe*)>
<! ELEMENT description ANY>
<! ELEMENT recipe(title, ingredient*, preparation, comment?, nutrition)>
<! ELEMENT title(# PCDATA)>
<! ELEMENT ingredient(preparation?)>
<! ATTLIST ingredient name CDATA #REQUIRED
                      amount CDATA # IMPLIED
                      unit CDATA #IMPLIED>
<! ELEMENT preparation(step*)>
<! ELEMENT step(#PCDATA)>
<! ELEMENT comment(# PCDATA)>
<! ELEMENT nutrition EMPTY>
<! ATTLIST nutrition protein CDATA #REQUIRED
                    carbohydrates CDATA #REQUIRED
                    fats CDATA #REQUIRED
                    calories CDATA #REQUIRED >
```

6B. Explain all the steps involved in using Tomcat server for servlet development. (use the example of a simple hello world servlet)

6C. Bring out the difference between innerHTML and outerHTML with suitable examples.
.   (5+3+2)