University of Mansoura
Faculty of Engineering
Dept. of Electronics & Communics.

3rd Year Electronics
Elective Course I
Time Allowed: 3 hrs.
Course Code: 9315
Date: 1/1/2014

Full Mark ( 70)

**Microwave Electronics**

**USE NEAT SKETCHES TO CLARIFY YOUR ANSWERS:**

1) A- Explain the high frequency limitations of conventional circuit components (both passive and active). And explain how these limitations are overcome in the microwave component.
   B- Derive an expression for velocity modulation at the input cavity of klystron amplifier.

2) A- Draw a schematic diagram of 2-cavity klystron amplifier and explain how amplification is achieved.
   B- A 2-cavity klystron amplifier has accelerating voltage 1000 volt and frequency 5 GHz and cavity gap 1 mm . Find the gap transit angle and the optimum length of drift space.

3) A- Draw a neat sketch of Reflex Klystron and explain the function of each part.
   B- Derive an expression for the bunching parameter in the Reflex Klystron.
   C- Explain the resonant modes and the process of electronic tuning in Reflex Klystron.
   D- A Reflex Klystron has $V_0$ = 2500 volt and frequency 6 GHz and drift space = 6 mm. Determine the repeller voltage for 1 ¾ mode and 3 ¾ mode.

4) A- What is Gunn effect in TED devices and explain how it is made useful in Gunn-diode oscillator.
   B- Use 2-valley model to explain the phenomenon of high-field domain in Gunn diode.

5) A- For Impatt diode, explain the two effects responsible for negative resistance in the Read diode characteristics.
   B- An impatt diode power amplifier has drift velocity 2 X $10^5$ cm/s, drift length = 5 μm and maximum operating voltage = 100 volt, max current = 250 mA and efficiency 15 % . Determine the maximum CW microwave power and the resonant frequency of the device.

بالتوفيق ـــ د. محمود الزلباني

**Faculty of Engineering, Mansoura University**
**Communications and Electronics Engineering Department – Third Year**
**Final Examination of "Web Programming Foundation I"**

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## *Q1.* (20 degree)

**A.** For the array object define the following methods:
Push, pop, shift, join

**B.** Write the output of the following java script code:

```
var fruits = ["Banana","Orange","Apple","Mango"];
var str = "mohammed@mans.edu.eg";
var  y = fruits.pop();
document.write(y+"<br/>");
var x1 = str.indexOf('@',0);
document.write(x1+"<br/>");
var part = str.substring(x1+1,str.length);
document.write(part +"<br/>");
var r = part.split('.');
var newfruits = fruits.push(r);
document.write(newfruits +"<br/>");
var z = fruits.push('kiwi');
document.write(fruits.pop() +"<br/>");
var s = fruits.shift();
document.write(s +"<br/>");
```

## *Q2.* (15 degree)

**A.** Choose the correct answer:

a. What is used to store information usually relevant to browsers and search engines?
   i. Cookies
   ii. Metatags
   iii. Tabs

b. Jquery written in which scripting language?
   i. Java script
   ii. Java
   iii. VBscript
   iv. HTML

c. Which method used to create custom animations?
   i. animate()
   ii. hide()
   iii. fade()

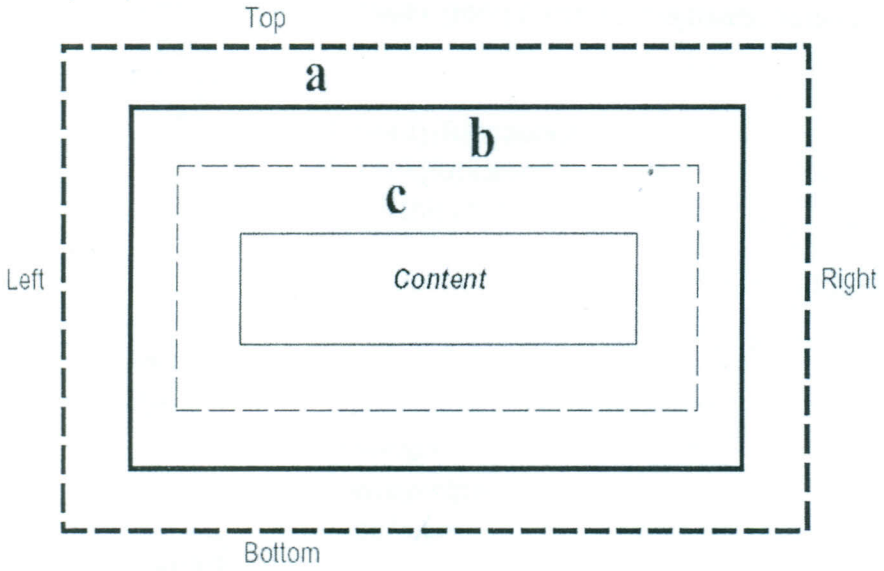
d. How do I get the text value of a selected option?

i. $('#myselect').val()
ii. $('#myselect').html()
iii. $('#myselect').val('value1')

e. How do I highlight text color not background color in text area by using jquery ?
i. $('textarea').css('color','red')
ii. $('textarea').style('background','red')
iii. $('textarea').style('color','red')

**B.** How can we give fade effect in jQuery? Mention all ways you know

**C.** CSS uses the Box Model when calculating the box properties. In The graph below, please indicate the properties represent the areas labeled as "a", "b", and "c




## *Q3.* (15 degree)

**A.** What is the difference between the 'while 'and 'do .... While' in loops?

**B.** What is the difference between 'break 'and 'continue' statements?

**C.** Give a short description to each statement of the following code and then describe the dynamic activity of the page:

```
1- <html>
<body>
<script>
function changeImage(){
    element=document.getElementById('myimage')
    if (element.src.match("bulbon")) {
            element.src="pic_bulboff.gif";
     }
    else {
            element.src="pic_bulbon.gif";
     }
```

```
}
</script>
<img id="myimage" onclick="changeImage()" src="pic_bulboff.gif" width="100"
height="180">
<p>Click the light bulb </p>
</body>
</html>
```

2-

```
<html>
<head>
<script src="http://ajax.googleapis.com/ajax/libs/jquery/1.10.2/jquery.min.js">
</script>
<script>
    $(document).ready(function(){
            $("p").click(function(){
                $(this).hide();
            });
    });
</script>
</head>
<body>
    <p>Click on me</p>
    <p>Click me away!</p>
    <p>Click me too!</p>
</body>
</html>
```

**Q4.** (20 degree)

A. **What are different ways to apply styles to a Web page?**

B. Design an html page that contains a text field to take the student name, a text field to take the student degree and a button when you click it calculate the grade of student as

Degree <50: Fail
Degree >=50 and Degree <65: pass
Degree >=65 and Degree <75: Good
Degree >=75 and Degree <85:V.Good
Degree >=85 and Degree <100: Excellent

The student degree must be validated to be not empty and to be numeric and not less than 0.