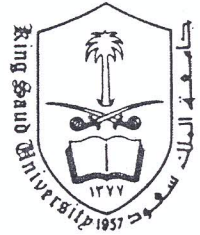




**King Saud University**  
**College of Science**  
**Department of Statistics & OR**  
**Second Semester 1433-1434**  
**Imidterm examination - 202 CSc.**



**Question 1**

Write a script file in Matlab that creates vector  $x = \text{randperm}(35)$  and then evaluate the following function:

$$\begin{aligned} y(x) &= 2 && \text{if } x < 6 \\ &= x - 4 && \text{if } 6 \leq x < 20 \\ &= 36 - x && \text{if } 20 \leq x \leq 35 \end{aligned}$$

**Question 2**

Given  $x = 1:10$  and  $y = [3 \ 1 \ 5 \ 6 \ 8 \ 2 \ 9 \ 4 \ 7 \ 0]$ , execute and interpret the results of the following commands:

- 1)  $(x > 3) \ \& \ (x < 8)$
- 2)  $x(x > 5)$
- 3)  $y(x \leq 4)$
- 4)  $x((x < 2) \mid (x \geq 8))$
- 5)  $y((x < 2) \mid (x \geq 8))$
- 6)  $x(y < 0)$

**Question 3**

In the following statement, evaluate the given MATLAB code fragment. Find values of  $y$ 's for each given  $x$

```
if 0 < x < 10
    y = 4*x
elseif 10 < x < 40
    y = 10*x
else
    y = 500
end
```

- |   |
|---|
| <ol style="list-style-type: none"><li>1) <math>x = -1 \quad y = ?</math></li><li>2) <math>x = 5 \quad y = ?</math></li><li>3) <math>x = 30 \quad y = ?</math></li><li>4) <math>x = 100 \quad y = ?</math></li></ol> |
|---|

#### Question 4

Write brief script to evaluate the following function. Start the script file with a request for **input** of the value of T,

$$h(T) = T - 10 \quad \text{when } 0 < T < 100$$
$$= 0.45 T + 900 \quad \text{when } T > 100$$

#### Question 5

Given the vector  $x = [1 \ 8 \ 3 \ 9 \ 0 \ 1]$ , create a short set of commands that will

- 1) Add up the values of the elements (use **sum**.)
- 2) Computes the running sum (use *for* statement.)
- 3) computes the sine of the given x-values (should be a vector)

#### Question 6

Given  $x = [4 \ 1 \ 6]$  and  $y = [6 \ 2 \ 7]$ , compute the following arrays. (use *for* statement)

- 1)  $c_i = x_i y_i$ , then add up the elements of c (sum of c).
- 2)  $d_i = x_i / (2 + x_i + y_i)$

#### Question 7

Given the arrays  $x = [1 \ 4 \ 8]$ ,  $y = [2 \ 1 \ 5]$  and  $A = [3 \ 1 \ 6 ; 5 \ 2 \ 7]$ , determine which of the following statements will correctly execute and provide the result.

If the command will not correctly execute, state why it will not.

- 1)  $x + y$
- 2)  $x' + y$
- 3)  $A - [x' \ y']$
- 4)  $[x ; y']$
- 5)  $[x ; y]$
- 6)  $A - 3$

*With best wishes*

*Dr Mazin Zaindin*