University Abou Bekr Belkaid of Tlemcen 19/01/2026
Faculty of Technology 11h30-13h30
Department of ST
L2 ingenieur ST

Final Exam in informatique 3

Full Name : ……

QCM : Choose only one correct answer for each question **(5 pts)**

Q1. What is programming?
- ☐ Writing text for the computer screen
- ☐ **Combining basic instructions to perform a specific task**
- ☐ Designing computer hardware
- ☐ Translating a program manually into machine code

Q2. MATLAB is mainly used for:
- ☐ Web development
- ☐ **Numerical computation and data analysis**
- ☐ Database management
- ☐ Operating system design

Q3. Which command displays the value of a variable x in MATLAB?
- ☐ show(x)
- ☐ print(x)
- ☐ **disp(x)**
- ☐ write(x)

Q4. Which of the following is a correct variable name in MATLAB?
- ☐ x-1
- ☐ **x1**
- ☐ x@

Q5. What does the following command create?
v = [3 7 9];
- ☐ A column vector
- ☐ **A row vector**
- ☐ A matrix of size 3×3
- ☐ A scalar

Q6. Which symbol is used to separate rows when creating a matrix in MATLAB?
- ☐ Comma (,)
- ☐ Space
- ☐ Colon (:)
- ☐ **Semicolon (;)**

Q7. What does the colon operator (:) allow you to do?
- ☐ Add matrices
- ☐ **Generate regularly spaced vectors**
- ☐ Display variables
- ☐ Clear the workspace

Q8. What is the result of the command : x = [0:2:6];
- ☐ [0 1 2 3 4 5 6]
- ☐ **[0 2 4 6]**
- ☐ [2 4 6]
- ☐ [0 2 6]

Q9. What does the command size(A) return?
- ☐ The number of elements of A
- ☐ The maximum value of A
- ☐ **The dimensions of matrix A**
- ☐ The sum of elements of A

Q10. Which MATLAB instruction allows testing a condition?
- ☐ For
- ☐ While
- ☐ If
- ☐ disp

Exrcice 1 : (5 pts)

Write the MATLAB commands that allow the calculation of the following mathematical expressions :

- $\sqrt{9}$ **sqrt (8)**
- $\cos(\pi/4)$ **cos(pi/4)**
- $v = \begin{matrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{matrix}$ **v=zeros(3,3)**

- $w = 1 \quad 1 \quad 1$ **w=ones (1,3)**

Exercice 2 : (10 psts)

Let the matrix **A** and the vector **W** be defined as follows:

$$A = \begin{bmatrix} 4 & 8 & 1 & 6 \\ 7 & 2 & 9 & 5 \\ 3 & 10 & 11 & 12 \end{bmatrix}$$

$$W = [6\ 3\ 8\ 1\ 4\ 9\ 2]$$

Part A: Matrix A

1. Extract the element located in the first row and last column of matrix A.
2. Create the vector L containing all the elements of the first row of matrix A.
3. Create the vector C containing all the elements of the last column of matrix A.
4. Extract the submatrix A1 formed by the intersection of the first and second rows with the second and third columns of matrix A.
5. Create the matrix A2, whose rows are those of matrix A, but displayed in reverse order.

Part B: Vector W

6. Extract the last element of vector W.
7. Create the vector W1 containing the first three elements of vector W.
8. Create the vector W2 containing the elements of vector V from the third to the last element.
9. Create the vector W3 formed by the elements of V with odd indices (1st, 3rd, 5th, …).
10. Create the vector W4 equal to vector V but displayed in reverse order.

```
% Definition of the matrix A and the vector W
A = [4 8 1 6; 7 2 9 5; 3 10 11 12];

W = [6 3 8 1 4 9 2];

%% Part A: Matrix A

% 1. Element in the first row and last column
elem = A(1, end);

% 2. Vector L containing the first row of A
L = A(1, :);

% 3. Vector C containing the last column of A
C = A(:, end);

% 4. Submatrix A1 (rows 1 and 2, columns 2 and 3)
A1 = A(1:2, 2:3);
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% 5. Matrix A2 with rows of A in reverse order
A2 = A(end:-1:1, :);

%% Part B: Vector W

% 6. Last element of vector W
last_elem = W(end);

% 7. Vector W1 containing the first three elements of W
W1 = W(1:3);

% 8. Vector W2 from the third to the last element of W
W2 = W(3:end);

% 9. Vector W3 containing elements of W with odd indices
W3 = W(1:2:end);

% 10. Vector W4: W in reverse order
W4 = W(end:-1:1);
```