

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)
ORGANISATION OF ISLAMIC COOPERATION (OIC)
DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

Lab Quiz - **02 (Set-D)**

Summer Semester - 2025

Course Number: EEE 4416

Full Marks: 20

Course Title: Simulation Lab

Time: 35 minutes

Question – 01

Write a script that returns the sum of every alternate element in a vector, starting from the first.

Test Case 1:

- Input: [1 2 3 4 5]
- Output: 9

Test Case 2:

- Input: [9 8 3 6 1]
- Output: 13

Test Case 3:

- Input: [1 0 1 0 1 0 1 0 -1 0 -1]
- Output: 2

Question – 02

Write a function called ‘**vec2num**’ that takes a row vector as input and converts it into a number.

Test case – 01

- Input: [1, 0, 3, 4]
- Output: 1034

Test case – 02

- Input: [2, 2, 4, 4, 6, 6, 10]
- Output: 22446610

Test case – 03

- Input: [100, 2000, 30000]
- Output: 100200030000

Test case – 04

- Input: [5600]
- Output: 5600

Question – 03

Write a function called **‘draw_U’** that takes an integer ‘n’ as input and returns an ‘U’ shaped square matrix of size n. ‘n’ has to be > 2.

Test case – 01

- Input: 2
- Output: ‘Input must be greater than 2’

Test case – 02

- Input: 5
- Output:

```
[1  0  0  0  1
 1  0  0  0  1
 1  0  0  0  1
 1  0  0  0  1
 1  1  1  1  1]
```

Test case – 04

- Input: 4
- Output:

```
[ 1  0  0  1
 1  0  0  1
 1  0  0  1
 1  1  1  1]
```

Test case – 05

- Input: 1000
- Output: ...

Question – 4

Write a function named **‘string_shift’** that takes two inputs – a string (s) and an integer ($n \geq 0$). The function would perform a circular right shift on the given string by ‘n’ positions.

For example, if the given string is "race" and $n=2$, then the function should return "cera" after the shift.

Test case – 01

- Input: ‘race’, 1
- Output: ‘erac’

Test case – 02

- Input: ‘race’, 0
- Output: ‘race’

Test case – 03

- Input: ‘race’, 16
- Output: ‘race’

Test case – 04

- Input: ‘batman’, 3
- Output: ‘manbat’

Test case – 05

- Input: ‘batman’, 20
- Output: ‘anbatm’