

First Semester Exam (Regular Session)

Multiple Choice Questions (MCQ)

Choose the correct answer for each question.

1. What is the output of this code?

```
x = 7  
y = 3  
print(x // y)
```

- a) 2.33
- b) 2
- c) 3
- d) 0

2. What is the correct syntax of a conditional test in Python?

- a) if x > 0 then
- b) if (x > 0):
- c) if x > 0:
- d) if x > 0 do

3. What is the output of the following code?

```
x = 5  
if x > 3:  
    print("A")  
else:  
    print("B")
```

- a) A
- b) B
- c) Nothing is displayed
- d) Error

4. Which keyword allows testing multiple successive conditions?

- a) else
- b) if

- c) elif
- d) elif

5. How many times is the message displayed?

```
for i in range(1, 14):  
    print("Tiaret")
```

- a) 13
- b) 14
- c) 15
- d) 16

6. What does range(2, 22, -2) produce?

- a) 2, 4, ..., 20
- b) Nothing
- c) 22, 20, ..., 4

7. What does the following f-string print?

```
name = "Ali"  
age = 25  
print(f"{name} is {age} years old")
```

- a) name is age years old
- b) Ali is 25 years old
- c) "name is age years old"
- d) Causes an error

8. What is the type of the value returned by input() in Python?

- a) int
- b) float
- c) str
- d) bool

9. What is the output of the following code?

```

a = 10
b = 3
a = a + b
print(a)

```

- a) 10
- b) 13
- c) 30

10. Which of the following expressions evaluates to True?

- a) $5 > 3$ and $2 < 1$
- b) $5 > 3$ or $2 < 1$
- c) not $(5 > 3)$
- d) $5 < 3$

Exercises

1. Exercise 1:

Write a Python program that reads a real number and displays:

- "Positive" if it is strictly positive,
- "Zero" if it is equal to zero,
- "Negative" otherwise.

2. Exercise 2:

Write a Python program that reads an integer and displays whether it is **even** or **odd**.

3. Exercise 3:

Let $T \in \mathbb{R}$ be a temperature expressed in degrees Celsius, entered by the user. Write a Python program that displays the value of the function of weather condition $f(T)$ defined as:

$$f(T) = \begin{cases} \text{"Freezing"} & \text{if } T \leq 0, \\ \text{"Cold"} & \text{if } 0 < T < 15, \\ \text{"Warm"} & \text{if } 15 \leq T < 30, \\ \text{"Hot"} & \text{if } T \geq 30. \end{cases}$$

4. Exercise 4:

Write a Python program that reads a positive integer N from the user and computes the sum of the cube roots of all integers from 1 to N . The sum is defined as:

$$S = \sum_{k=1}^N \sqrt[3]{k} = \sqrt[3]{1} + \sqrt[3]{2} + \sqrt[3]{3} + \dots + \sqrt[3]{N}$$

5. Exercise 5:

Run and execute the following program and write the complete output:

```

for i in range(0, 4):
    for j in range(0, 4):
        if i > j:
            print('*', end=' ')
    print('*')

```

Important: Mobile phones are strictly forbidden during the exam.

PEOPLE'S DEMOCRATIC REPUBLIC OF ALGERIA

University of Ibn Khaldoun – Tiaret

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First Year Licence – Computer Science

First Semester Exam – Model solution

Multiple Choice Questions (MCQ) – Answer Key(7.5points = 0.75×10)

1. **Answer: b)** Explanation: `//` is integer division, so $7//3 = 2$.
2. **Answer: c)** Explanation: Python uses `if condition:` without `then` or `do`.
3. **Answer: a)** Explanation: $x = 5 > 3$, so `"A"` is printed.
4. **Answer: d)** Explanation: `elif` allows testing multiple successive conditions.
5. **Answer: a)** Explanation: `range(1, 14)` produces numbers 1 to 13, so 13 prints.
6. **Answer: b)** Explanation: A negative step in `range(2,22,-2)` produces an empty sequence.
7. **Answer: b)** Explanation: f-strings evaluate variables, producing `"Ali is 25 years old"`.
8. **Answer: c)** Explanation: `input()` always returns a str.
9. **Answer: b)** Explanation: `a = a + b` → $10 + 3 = 13$.
10. **Answer: b)** Explanation: `5 > 3 or 2 < 1` evaluates to `True`.

Exercises – Sample Solutions

1. Exercise 1: 2.5 point

```
x = float(input("Enter a number: "))
if x > 0:
    print("Positive")
elif x == 0:
    print("Zero")
else:
    print("Negative")
```

2. Exercise 2: 2 points

```
n = int(input("Enter an integer: "))
if n % 2 == 0:
    print("Even")
else:
    print("Odd")
```

3. Exercise 3: 3 points

```
T = float(input("Enter temperature in Celsius: "))
if T <= 0:
    print("Freezing")
elif T < 15:
    print("Cold")
```

```
elif T < 30:
    print("Warm")
else:
    print("Hot")
```

4. Exercise 4: 3 points

```
N = int(input("Enter N: "))
S = 0
for i in range(1, N + 1):
    S = S+i**(1/3)
print("S=", S)
```

5. Exercise 5: 2 points

Output:

```
*
* *
* * *
* * * *
```

Explanation: The loop prints "*" if 'i > j', and an extra "*" is printed after each row :

i \ j	0	1	2	3
0	-	-	-	-
1	*	-	-	-
2	*	*	-	-
3	*	*	*	-