Perfect 👍 — here's the **same document formatted cleanly**, but **without marking any correct answers** (no ticks, no highlights — just neat structure).

🧮 Time and Space Complexity – Practice Questions

Q1.

What is the time and space complexity of the following code?

```
int a = 0, b = 0;
for (i = 0; i < N; i++) {
    a = a + rand();
}
for (j = 0; j < M; j++) {
    b = b + rand();
}
```

Choose the correct answer:

- O(N * M) time, O(1) space

- O(N + M) time, O(N + M) space

- O(N + M) time, O(1) space

- O(N * M) time, O(N + M) space

Q2.

What is the time complexity of the following code?

C++

```
void solve(int n){
    for(int i = 0; i < n; i++){
        for(int j = 0; j < i / 2; j++){
            // O(1) operation
        }
    }
}
```

Python

```
def solve(n):
    for i in range(n):
        for j in range(i // 2):
            # O(1) operation
```

Choose the correct answer:

- O(N)

- O(N * log N)

- O(N * √N)

- O(N * N)

Q3.

What is the time complexity of the following code?

```
k = 0
for i in range(n // 2, n + 1):
    j = 2
    while j <= n:
        k = k + n // 2
        j = j * 2
```

Choose the correct answer:

- O(n)
```

- O(n log n)

- O(n²)

- O(n² log n)

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## Q4.

What is the time complexity of the following code?

**C++**

```cpp
int a = 0, i = N;
while (i > 0) {
    a += i;
    i /= 2;
}
```

Python

```python
a = 0
i = N
while i:
    a = a + i
    i = i // 2
```

Choose the correct answer:

- O(N)

- O(√N)

- O(N / 2)

- O(log N)

Q5.

The complexity of the Binary Search algorithm is:

Choose the correct answer:

- O(n)

- O(log n)

- O(n²)

- O(n log n)

Q6.

If an algorithm has a time complexity of O(1), then the complexity of it is:

Choose the correct answer:

- constant

- polynomial

- exponential

- none of the mentioned

Q7.

If for an algorithm time complexity is given by $O(\log_2 n)$, then the complexity will be:

Choose the correct answer:

- constant

- polynomial

- exponential

- none of the mentioned

Q8.

If an algorithm has a time complexity of O(n), then the complexity of it is:

Choose the correct answer:

- constant

- linear

- exponential

- none of the mentioned

Q9.

If for an algorithm time complexity is given by $O((3/2)^n)$, then the complexity will be:

Choose the correct answer:

- constant

- quadratic

- exponential

- none of the mentioned

Q10.

The complexity of the Linear Search algorithm is:

Choose the correct answer:

- O(n)

- O(log n)

- O(n²)

- O(n log n)

Answers:

Question	Correct Answer
Q1	O(N + M) time, O(1) space
Q2	O(N²)
Q3	O(n log n)
Q4	O(log N)
Q5	O(log n)
Q6	constant
Q7	polynomial
Q8	linear
Q9	exponential
Q10	O(n)