20 multiple-choice questions (MCQs) on pseudo-code with explanations for each answer

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1. Identify the Output

- **Pseudo-code:**

```
x = 10
y = 5
while x > y:
   x = x - 2
print(x)
```

- **Options:**
  - a) 0
  - b) 2
  - c) 4
  - d) 6
- **Answer:** c) 4
- **Explanation:** The loop continues until x is no longer greater than y. Starting from x = 10, subtracting 2 each time results in x = 8, x = 6, and finally x = 4, at which point x is no longer greater than y.

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2. What will be the output of the following pseudo-code?

- **Pseudo-code:**

```
n = 5
sum = 0
for i = 1 to n:
   sum = sum + i
print(sum)
```

- **Options:**
  - a) 5
  - b) 10
  - c) 15
  - d) 20
- **Answer:** c) 15
- **Explanation:** The loop runs from 1 to 5, adding each i to sum. The calculations are 1 + 2 + 3 + 4 + 5 = 15.

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3. Which of the following is the correct output of the pseudo-code?

- **Pseudo-code:**

```
count = 0
for i = 1 to 10:
   if i % 2 == 0:
      count = count + 1
print(count)
```

- **Options:**
  - a) 2
  - b) 4
  - c) 5
  - d) 10

- **Answer:** c) 5
- **Explanation:** The loop counts even numbers from 1 to 10. The even numbers are 2, 4, 6, 8, 10, so the count is 5.

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4. Determine the output of the following pseudo-code:

- **Pseudo-code:**

```
a = 3
b = 4
if a > b:
   print(a)
else:
   print(b)
```

- **Options:**
  - a) 3
  - b) 4
  - c) 7
  - d) None of the above
- **Answer:** b) 4
- **Explanation:** Since a is not greater than b, the else block is executed, printing b, which is 4.

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5. What will the pseudo-code below print?

- **Pseudo-code:**

```
x = 7
if x % 2 == 0:
   print("Even")
else:
   print("Odd")
```

- **Options:**
  - a) Even
  - b) Odd
  - c) None
  - d) Error
- **Answer:** b) Odd
- **Explanation:** 7 % 2 equals 1, so x is odd, and the code prints "Odd".

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6. Identify the output of this pseudo-code:

- **Pseudo-code:**

```
x = 1
while x < 5:
   x = x * 2
print(x)
```

- **Options:**
  - a) 2
  - b) 4
  - c) 8
  - d) 16

- **Answer:** c) 8
- **Explanation:** The loop doubles x starting from 1: x = 2, x = 4, x = 8. The loop stops as x = 8 is not less than 5.

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7. Find the output for the following pseudo-code:

- **Pseudo-code:**

```
a = 10
b = 20
c = 30
if a > b and a > c:
   print(a)
elif b > a and b > c:
   print(b)
else:
   print(c)
```

- **Options:**
  - a) 10
  - b) 20
  - c) 30
  - d) None of the above
- **Answer:** c) 30
- **Explanation:** c is the largest value, so the else block is executed, printing c = 30.

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8. What is the output of this pseudo-code?

- **Pseudo-code:**

```
a = 0
for i = 1 to 3:
   for j = 1 to 2:
      a = a + 1
print(a)
```

- **Options:**
  - a) 3
  - b) 6
  - c) 9
  - d) 12
- **Answer:** b) 6
- **Explanation:** The inner loop increments a twice for each iteration of the outer loop. With 3 outer loop iterations, a is incremented a total of 6 times.

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9. Choose the correct output of this pseudo-code:

- **Pseudo-code:**

```
a = 5
b = 10
if a < b:
   b = b - a
print(b)
```

- **Options:**

    - a) 0
    - b) 5
    - c) 10
    - d) 15
- **Answer:** b) 5
- **Explanation:** Since a is less than b, b is updated to b - a = 5.

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10. What is the result of the following pseudo-code?

- **Pseudo-code:**
  ```
  x = 8
  y = 2
  z = x / y
  print(z)
  ```
- **Options:**
  - a) 4
  - b) 8
  - c) 16
  - d) Error
- **Answer:** a) 4
- **Explanation:** The division `x / y = 8 / 2` results in 4.

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11. Identify the output of this pseudo-code:

- **Pseudo-code:**
  ```
  a = 3
  b = 2
  while b < a:
     b = b + 1
  print(b)
  ```
- **Options:**
  - a) 2
  - b) 3
  - c) 4
  - d) Infinite loop
- **Answer:** b) 3
- **Explanation:** `b` is incremented once (from 2 to 3), which makes it no longer less than `a`. The loop ends, printing `b = 3`.

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12. Find the output of this pseudo-code:

- **Pseudo-code:**
  ```
  x = 1
  y = 1
  for i = 1 to 4:
```

```
    x = x + i
    y = y * i
print(x, y)
```
- **Options:**
  - a) 10 24
  - b) 11 24
  - c) 11 25
  - d) 12 25
- **Answer:** b) 11 24
- **Explanation:** `x` is incremented by each `i` (1+2+3+4), and `y` is multiplied by each `i` (1*2*3*4).

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13. What is the output of the following pseudo-code?
- **Pseudo-code:**
```
x = 5
y = 3
z = x * y
if z > 10:
    z = z + 5
print(z)
```
- **Options:**
  - a) 10
  - b) 15
  - c) 20
  - d) 25
- **Answer:** c) 20
- **Explanation:** `z` starts as `5 * 3 = 15`, and since `z > 10`, `5` is added, making `z = 20`.

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14. Choose the correct output:
- **Pseudo-code:**
```
n = 4
for i = 1 to n:
    n = n + i
print(n)
```
- **Options:**
  - a) 4
  - b) 7
  - c) 10
  - d) Infinite loop
- **Answer:** a) 4
- **Explanation:** The pseudo-code seems misleading, but the loop should end normally, printing the final value of `n`. However, this may depend on interpretation.

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15. Determine the output of this pseudo-code:

- **Pseudo-code:**

```
x = 7
while x > 0:
    x = x - 3
print(x)
```

- **Options:**
  - a) -2
  - b) 0
  - c) 1
  - d) Infinite loop
- **Answer:** a) -2
- **Explanation:** The loop reduces `x` by 3 each time until it drops below 0. The final value of `x` is -2.

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16. What will this pseudo-code output?

- **Pseudo-code:**

```
a = 2
b = 5
for i = 1 to 3:
    a = a * b
print(a)
```

- **Options:**
  - a) 30
  - b) 50
  - c) 250
  - d) 125
- **Answer:** d) 125
- **Explanation:** `a` is multiplied by `b` three times: `2*5*5*5 = 125`.

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17. Identify the correct output:

- **Pseudo-code:**

```
x = 10
y = 2
if x % y == 0:
    x = x / y
print(x)
```

- **Options:**
  - a) 2
  - b) 5

  - c) 10
  - d) 20
- **Answer:** b) 5
- **Explanation:** Since `10 % 2 == 0`, `x` is divided by `y`, making `x = 5`.

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18. Find the output for this pseudo-code:
- **Pseudo-code:**
  ```
  a = 0
  b = 1
  while b < 3:
      a = a + b
      b = b + 1
  print(a)
  ```
- **Options:**
  - a) 1
  - b) 3
  - c) 6
  - d) Infinite loop
- **Answer:** b) 3
- **Explanation:** The loop runs twice (`b = 1`, `b = 2`), adding `b` to `a`, resulting in `a = 3`.

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19. Choose the correct output:
- **Pseudo-code:**
  ```
  x = 3
  y = 5
  z = 7
  if x < y and y < z:
      print(z)
  else:
      print(y)
  ```
- **Options:**
  - a) 3
  - b) 5
  - c) 7
  - d) None of the above
- **Answer:** c) 7
- **Explanation:** Both conditions `x < y` and `y < z` are true, so `z` is printed, which is 7.

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20. What will this pseudo-code print?
- **Pseudo-code:**
  ```
  x = 10
  while x >= 0:
  ```

```
    x = x - 3
print(x)
```
- **Options:**
  - a) -1
  - b) -2
  - c) 0
  - d) 1
- **Answer:** a) -1
- **Explanation:** The loop decreases `x` by 3 until `x` becomes -2, and then the loop ends. The final value of `x` printed is -1.
