

EmSAT Computer Science – Python Practice Questions

Section I: Computer Science Theory

1.

Which of these technologies has made it possible for more employees to work from home?

- Fax machines
- Video conferencing
- Computer Games
- Viruses

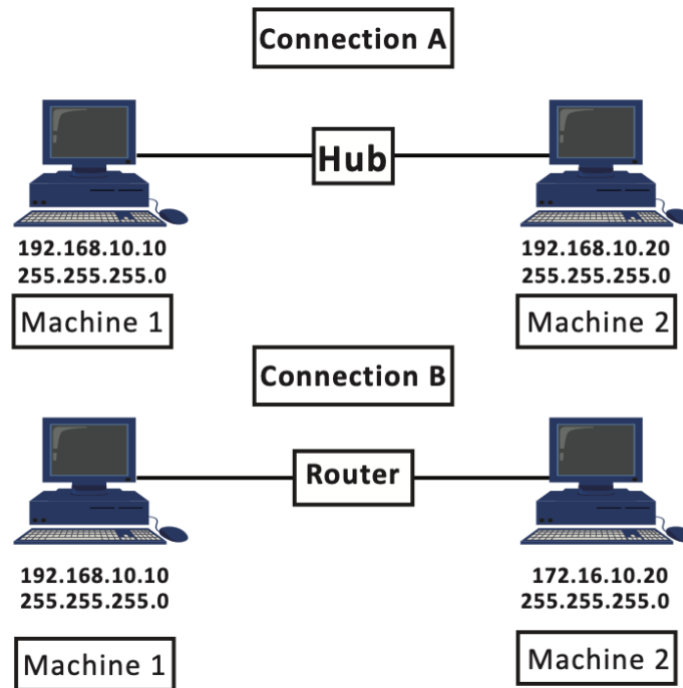
2.

Which network type is used to connect computers within a town or a city?

- Metropolitan Area Network (MAN)
- Enterprise Private Network (EPN)
- Local Area Network (LAN)
- Wide Area Network (WAN)

3.

In which of the following connections, machine 1 and machine 2 will most likely use MAC addresses to transmit data between each other?



- Neither Connection A nor B
- Connection B
- Connection A
- Both Connections A and B



4.

Central processing units are differentiated by _____

- weight
- size
- speed
- capacity

5.

Which computing trend focuses on using large datasets to extract valuable insights and knowledge?

- Big data
- Machine learning (ML)
- Artificial intelligence (AI)
- Internet of Things (IoT)



6.

Which network hardware component is responsible for connecting multiple network devices together and facilitating communication between them?

- Switch
- Router
- Firewall
- Modem

7.

Which of the following is considered good practice when implementing a network security program?

- Turn off the firewall when an incident happens
- Limit the upgrade requirements for the system software
- Change the router default password
- Use factory settings for the network equipment



8.

In the network communication layer model, each layer provides services that are reliant on services provided by which layer?

- Below layer
- Above layer
- Same layer
- All layers

9.

What is the base of Hexadecimal numbering system?

- 12
- 14
- 16
- 18



10.

Which of the following statements correctly describes primary methods of data manipulation?

- Data manipulation involves encryption, compression, and hashing.
- Data manipulation involves processes such as sorting, filtering, and aggregating.
- Data manipulation involves data visualization, data modeling, and data mining.
- Data manipulation involves data integration, data warehousing, and data scrubbing.

11.

Which binary representation correctly represents the decimal number 25?

- 10001
- 11110
- 10100
- 11001



12.

You are organizing a small social gathering at your home, and you want to set up a network where attendees can easily share photos and music files with each other. There is no need for a central server or complex network management. Which network architecture would be most suitable for this scenario?

- Client-Server Model
- Peer-to-Peer Model
- Hybrid Model
- Mesh Model

13.

Which logic gate is represented by the following truth table?

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	0

- NOR
- NAND
- XOR
- XNOR



14.

Using the ASCII values sheet, what is the binary representation of the following text?

hope

- 01100000 01101111 01110000 01100101
- 01101000 01101000 01110001 01100101
- 01101000 01101111 01110000 01100101
- 01101000 01101000 01110000 01100101

15.

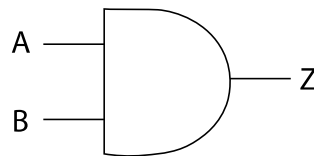
Which of the following is a network security system that filters and controls the incoming and outgoing network traffic based on predetermined security rules?

- Hub
- Router
- Antivirus
- Firewall



16.

Which logic gate is represented in the symbol below?



- XOR
- OR
- NAND
- AND

17.

Which of the following best describes how software controls hardware in a computing system?

- Software communicates with hardware through electrical signals.
- Software directly manipulates physical components in the hardware.
- Software sends commands to the operating system, which controls the hardware.
- Software and hardware operate independently and do not interact with each other.



18.

Convert 101011 binary number into decimal number format.

-
-
-
-

19.

Which of the following is an example of a network security threat that targets network devices by overwhelming them with a flood of incoming network traffic?

-
-
-
-



20.

Which of the following is **not** an operating system?

- MS Office 365
- Linux
- Android
- Macintosh

Section 2: Problem Solving and Programming Practices

21.

When a program calls one of its functions, where does program execution move to?

- The first line inside the program
- The last line inside the program
- The last line inside the function
- The first line inside the function

22.

Which statement can be used to create a variable that can store the value **3.5**?

- `val = 7 // 2`
- `val = int(35/10)`
- `val = 7 / 2`
- `val = 35 // 10`

23.

Which code sums the digits of a positive number n ?

For example,

If $n = 123$, then total = 6

If $n = 109$, then total = 10

```
n = int(input())
total = 0
while(n >= 0):
    total = total + n % 10
    n = n // 10
```

```
n = int(input())
total = 0
while(n > 0):
    total = total + n / 10
    n = n % 10
```

```
n = int(input())
total = 0
while(n > 0):
    total = total + n % 10
    n = n // 10
```

```
n = int(input())
total = 0
while(n > 0):
    total = total + n % 10
    n = n / 10
```



24.

What will be the output of the following code?

```
a = 0
def my_function():
    a = 3
    print(a)
    a += 1
my_function()
print(a)
```

3
3

3
0

3
4

3
1



25.

Which is the correct statement to use to print elements from list **a** in reverse order?

```
A = [1, 3, 4, 5, 6, 7, 8]
N = len(a)
For i in range(N, 0, -1):
    # Missing Statement
```

-
-
-
-

26.

Which of the following is the right way to have a comment added on the same line that has code?

-
-
-
-



27.

The function shown below checks if a given number is prime and returns true if prime, otherwise returns false. Which line contains a syntax error?

```
1 num = int(input('Type in a number'))
2 flag = False
3 if num > 1:
4     for i in range(2, num):
5         If(num % i) == 0:
6             flag = true
7             break
8 If flag:
9     print(num, "is not a prime number")
10 else:
11     print(num, "is a prime number")
12
```

-
-
-
-



28.

The pseudocode below uses which of the following algorithm construct?

```
FOR (side from 1 to 4)
    turnRight(45) forward(length)
END FOR
```

- Invocation
- Iteration
- Selection
- Sequence

29.

Which of the following defines the strategy of using a loop inside another loop in a code?

- Duplicate loops
- Nested loops
- Repeated loops
- Multiple loops

30.

Which statement generates random integer numbers that represent a dice face value in the range [1, 6] from the random library?

-
-
-
-

31.

A function **fun** is defined below:

*Def fun(a):
Return a + (a-1)*

What will be the output of the following statement?

print(fun(fun(6) + fun(-2)))

-
-
-
-

32.

Consider the following pseudo code. How many times would “Abu Dhabi” be displayed?

```
number ← 1  
WHILE number < 5  
    PRINT (“Abu Dhabi”)  
    number ← number + 1  
END WHILE
```

-
-
-
-

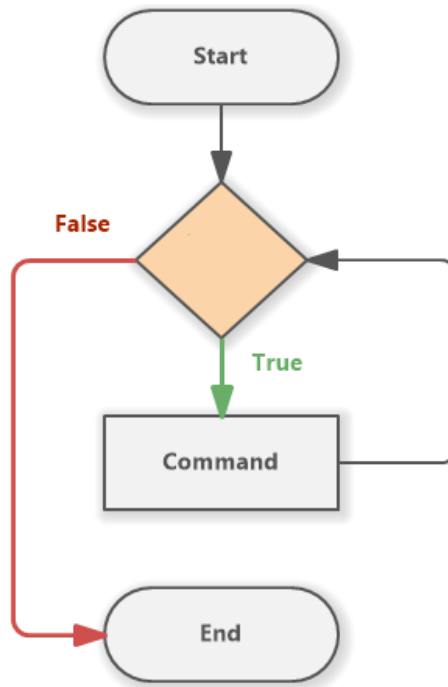
33.

What is the default location of a new element that is inserted into a static data structure?

-
-
-
-

34.

This flowchart can be best described as a _____



- For loop
- While loop
- Do-while loop
- If condition



35.

What will be the output of the following code?

```
n = 6709
a = 0
while n > 0:
    if n % 10 != 0:
        a += n % 10
    n = n // 10
print (a)
```

-
-
-
-

36.

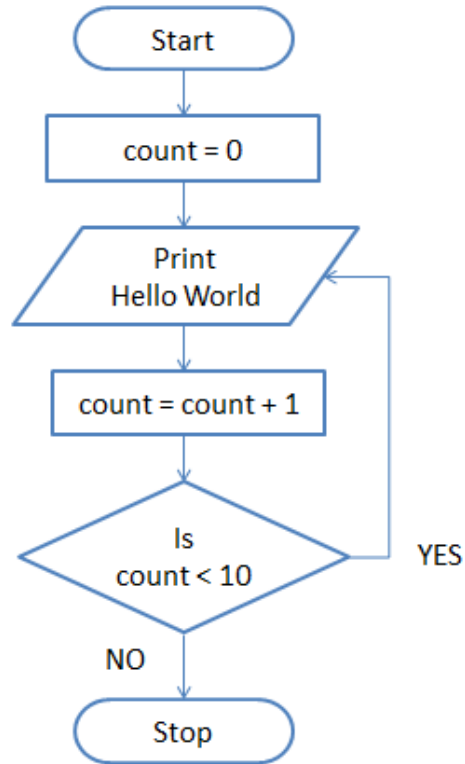
Which statement creates and opens a new file called “**data.txt**” for writing only?

-
-
-
-



37.

How many times the "Hello World" will be print according to this flowchart?



-
-
-
-

38.

A Palindrome is a string of number that is the same from left to right or from right to left.

For example:

level

civic

Which of the following is the right code to check whether a string is a palindrome or not?

```
if str == str[::-1]:  
    print("{} is a palindrome!".format(str))  
else:  
    print("{} is not a palindrome!".format(str))
```

```
for i in range(len(str)):  
    if str[i] != str[len(str)-1]:  
        print("{} is a palindrome!".format(str))  
    else:  
        print("{} is not a palindrome!".format(str))
```

```
for i in range(len(str)):  
    if str[i] == str[len(str)-i]:  
        print("{} is a palindrome!".format(str))  
    else:  
        print("{} is not a palindrome!".format(str))
```

```
for i in range(len(str)):  
    if str[i] == str[len(str)+1-i]:  
        print("{} is a palindrome!".format(str))  
    else:  
        print("{} is not a palindrome!".format(str))
```



39.

What will be the output of the following code?

```
x = 2
y = 5 + x
if (y > 7 and x <= 2):
    print("+ +")
else:
    print("* *")
print("- -")
```

* *
- -

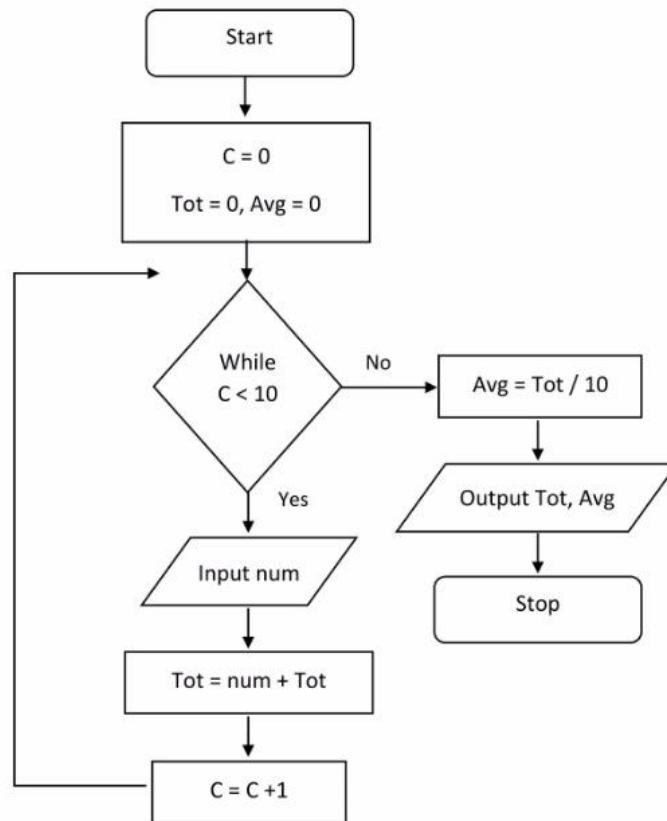
- -

+ +
- -

++

40.

How many values should be inputted to obtain total and average according to this flowchart?



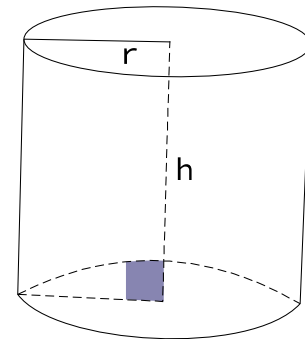
-
-
-
-

41.

The function shown below calculates the area of a cylinder. Select the correct function header.

```
#function header  
pi = 3.141592653  
return 2 * pi * r * r + h * (2 * pi * r)
```

$$A = 2\pi r^2 + h(2\pi r)$$



-
-
-
-

42.

Suppose you want to write a program in which you will take 3 integer numbers from the user. What are the variable names you should use if you want to follow the best programming practices?

-
-
-
-

43.

A program is written that allows the user to input their name(string), gender(char), year of birth (int) and income (double). Which programming construct is being used?

-
-
-
-



44.

Which is the correct operator for the power (X^Y)

-
-
-
-

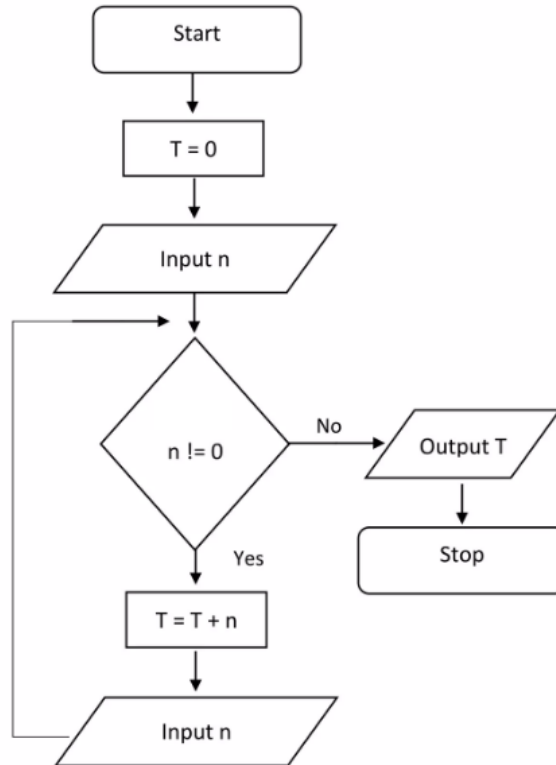
45.

Which of the following is an invalid statement in python?

-
-
-
-

46.

How do you exit from this program depicted by the flowchart?



-
-
-
-



47.

What does this pseudocode do?

```
Begin
  C = 1
  Max = 0
  Read num1
  Max = num1
  While c < 10 Then
    Read num2
    If num2 > Max Then
      Max = num2
  C = C + 1
  End while
  Display Max
End
```

- Read any 9 numbers and output the maximum
- Read any 10 numbers and output the maximum
- Output all the input values in ascending order
- This program has an error

48.

A function **isPalindrome** which returns a boolean value if the string **s** is a palindrome (i.e can be read from left or right the same way) is defined below.

Which statement is **NOT** a correct way to call the function **isPalindrome**?

```
def isPalindrome(s):  
    # function implementation goes here
```

- `print(isPalindrome(abccba))`
- `name = "salalas"
if (isPalindrome(name) == True):
 Print("Yes")`
- `if (isPalindrome("abccba")): print("Yes")`
- `if(isPalindrome("12321")): print("Yes")`

49.

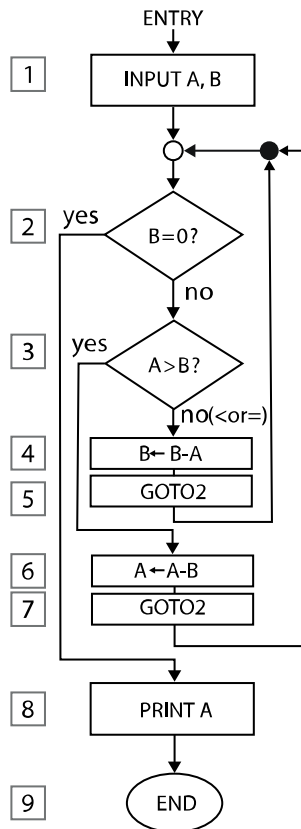
What is the output of the following statement?

`print(23+28%9*5)`**

- 13
- 46
- 54
- 24

50.

Given the following algorithm (flowchart), what is the output of the last statement, PRINT A, if the inputs are A=78, and B=12 ?



-
-
-
-