

Select the letter of the most appropriate answer and completely shade in the corresponding region on the answer sheet.
If no answer seems appropriate then completely shade in region E on the answer sheet.
Python 3.10.0 was used to generate code in the questions.

- 1) The instruction set for a microprocessor is unique and is typically understood only by the microprocessors of the same brand.
A) True
B) False
- 2) The CPU understands instructions written in a binary machine language.
A) True
B) False
- 3) A bit that is turned off is represented by the value -1.
A) True
B) False
- 4) The main reason to use secondary storage is to hold data for long periods of time, even when the power supply to the computer is turned off.
A) True
B) False
- 5) RAM is a volatile memory used for temporary storage while a program is running.
A) True
B) False
- 6) Programs are commonly referred to as
A) software
B) utility programs
C) application software
D) system software
- 7) Where does a computer store a program and the data that the program is working with while the program is running?
A) in secondary storage
B) in main memory
C) in the CPU
D) in the microprocessor
- 8) What type of volatile memory is usually used only for temporary storage while running a program?
A) ROM
B) TMM
C) TVM
D) RAM
- 9) Which language is referred to as a low-level language?
A) Python
B) C++
C) Java
D) Assembly language
- 10) The disk drive is a secondary storage device that stores data by _____ encoding it onto a spinning circular disk.
A) electrically
B) digitally
C) magnetically
D) optically
- 11) A _____ has no moving parts and operates faster than a traditional disk drive.
A) hyper drive
B) DVD drive
C) jumper drive
D) solid state drive

- 24) Expressions that are tested by the `if` statement are called Boolean expressions.
 A) True
 B) False
- 25) When using the _____ logical operator, one or both of the subexpressions must be true for the compound expression to be true.
 A) `maybe` B) `not` C) `or` D) `and`
- 26) Which of the following is the correct `if` clause to determine whether `y` is in the range 10 through 50, inclusive?
 A) `if y >= 10 and y <= 50:` B) `if y >= 10 or y <= 50:`
 C) `if 10 > y and y < 50:` D) `if 10 < y or y > 50:`
- 27) What is the result of the following Boolean expression, given that `x = 5`, `y = 3`, and `z = 8`?
`x < y or z > x`
 A) `False` B) 5 C) 8 D) `True`
- 28) What is the result of the following Boolean expression, given that `x = 5`, `y = 3`, and `z = 8`?
`x < y and z > x`
 A) 8 B) 5 C) `False` D) `True`
- 29) What does the following expression mean?
`x <= y`
 A) `x is less than or equal to y` B) `x is less than y`
 C) `x is greater than y` D) `x is greater than or equal to y`
- 30) When using the _____ logical operator, both subexpressions must be true for the compound expression to be true.
 A) `not` B) either `or` or `and` C) `or` D) `and`
- 31) Reducing duplication of code is one of the advantages of using a loop structure.
 A) True
 B) False
- 32) A good way to repeatedly perform an operation is to write the statements for the task once and then place the statements in a loop that will repeat as many times as necessary.
 A) True
 B) False
- 33) What are the values that the variable `num` contains through the iterations of the following `for` loop?
`for num in range(4):`
 A) 0, 1, 2, 3, 4 B) 1, 2, 3, 4 C) 1, 2, 3 D) 0, 1, 2, 3
- 34) What are the values that the variable `num` contains through the iterations of the following `for` loop?
`for num in range(2, 9, 2):`
 A) 1, 3, 5, 7, 9 B) 2, 4, 6, 8
 C) 2, 3, 4, 5, 6, 7, 8, 9 D) 2, 5, 8
- 35) _____ is the process of inspecting data that has been input into a program in order to ensure that the data is valid before it is used in a computation.
 A) Correcting data B) Input validation C) Data validation D) Correcting input

36) When will the following loop terminate?

```
while keep_on_going != 999:
```

- A) when `keep_on_going` refers to a value greater than `999`
- B) when `keep_on_going` refers to a value less than `999`
- C) when `keep_on_going` refers to a value equal to `999`
- D) when `keep_on_going` refers to a value not equal to `999`

37) Which of the following represents an example to calculate the sum of numbers (that is, an accumulator), given that the number is stored in the variable `number` and the total is stored in the variable `total`?

- A) `total = number`
- B) `total + number = total`
- C) `number += number`
- D) `total += number`

38) What will be displayed after the following code is executed?

```
total = 0
for count in range(1,4):
    total += count
print(total)
```

- A) 5
- B) 1 4
- C) 6
- D) 1
3
6

39) What will be displayed after the following code is executed?

```
for num in range(0, 20, 5):
    num += num
print(num)
```

- A) 5 10 15
- B) 30
- C) 0 5 10 15 20
- D) 25

40) What does the following program do?

```
student = 1
while student <= 3:
    total = 0
    for score in range(1, 4):
        score = int(input("Enter test score: "))
        total += score
    average = total/3
    print("Student ", student, "average: ", average)
    student += 1
```

- A) It accepts 3 test scores for each of 3 students and outputs the average for each student.
- B) It accepts one test score for each of 3 students and outputs the average of the 3 scores.
- C) It accepts 4 test scores for 3 students and outputs the average of the 12 scores.
- D) It accepts 4 test scores for 2 students, then averages and outputs all the scores.

Answer Key

Testname: MATH RELAY 2023 PROGRAMMING

- 1) A
- 2) A
- 3) B
- 4) A
- 5) A
- 6) A
- 7) B
- 8) D
- 9) D
- 10) C
- 11) D
- 12) C
- 13) C
- 14) B
- 15) A
- 16) B
- 17) A
- 18) A
- 19) B
- 20) A
- 21) C
- 22) D
- 23) A
- 24) A
- 25) C
- 26) A
- 27) D
- 28) C
- 29) A
- 30) D
- 31) A
- 32) A
- 33) D
- 34) B
- 35) B
- 36) C
- 37) D
- 38) C
- 39) B
- 40) A