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وتقنية المعلومات

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# Sample Exam Questions

## Mid-Term Exam 2 – Part 1 (MCQ)

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CPIT 110 (Problem-Solving and Programming)



# تنبيه!

- هذه الأسئلة عبارة عن عينة فقط توضح طريقة أسئلة اختبار الدوري الثاني - الجزء الأول (الاختيارات) لمقرر البرمجة وحل المشكلات (CPIT-110).
- هذه الأسئلة لا يُعتمد عليها للمذاكرة.
- قد لا تشمل هذه الأسئلة جميع المواضيع المقررة للاختبار.
- هذه الأسئلة مناسبة للمراجعة بعد الانتهاء من مذاكرة وتطبيق المواضيع المقررة للاختبار.
- حلول الأسئلة مرفقة نهاية صفحات هذا الملف.

# Chapter 4: Selections

## Questions

# Question #1

The "less than or equal to" comparison operator is \_\_\_\_\_.

a) <<

b) <=

c) !=

d) >=

# Question #2

The equal comparison operator is \_\_\_\_\_.

a) <>

b) !=

c) ==

d) =

# Question #3

To generate a random integer between 0 and 5, use \_\_\_\_\_.

- a) `random.randint(0, 5)`
- b) `random.randint(0, 6)`
- c) `random.randint(1, 5)`
- d) `random.randrange(0, 5)`

# Question #4

`random.randint(0, 1)` returns \_\_\_\_\_.

- a) 0
- b) 1
- c) 0 or 1
- d) 2

# Question #5

`random.random()` returns \_\_\_\_\_.

- a) a float number  $i$  such that  $0 < i < 1.0$
- b) a float number  $i$  such that  $0 \leq i < 1.0$
- c) a float number  $i$  such that  $0 \leq i \leq 1.0$
- d) a float number  $i$  such that  $0 < i < 2.0$



# Question

## #6

Which of the following code displays the area of a circle if the radius is positive.

- a) `if radius != 0: print(radius * radius * 3.14159)`
- b) `if radius >= 0: print(radius * radius * 3.14159)`
- c) `if radius > 0: print(radius * radius * 3.14159)`
- d) `if radius <= 0: print(radius * radius * 3.14159)`

# Question #7

What is the output of the following code?

```
x = 0
if x < 4:
    x = x + 1
print("x is", x)
```

- a) x is 0
- b) x is 1
- c) x is 2
- d) x is 3

# Question

## #8

Suppose `isPrime` is a boolean variable, which of the following is the correct statement for testing if `isPrime` is true.

- a) `if isPrime = True:`
- b) `if isPrime == TRUE:`
- c) `if isPrime:`
- d) `if not isPrime = False:`

# Question #9

Analyze the following code:

```
even = False
if even = True:
    print("It is even!")
```

- a) The program has a syntax error in line 1 (`even = False`)
- b) The program has a syntax error in line 2 `if even = True` is not a correct condition. It should be replaced by `if even == True:` or `if even:`.
- c) The program runs, but displays nothing.
- d) The program runs and displays `It is even!`.

# Question #10

Analyze the following code:

```
even = False
if even:
    print("It is even!")
```

- a) The code displays It is even!
- b) The code displays nothing.
- c) The code is wrong. You should replace `if even:` with `if even == True:`
- d) The code is wrong. You should replace `if even:` with `if even = True:`

# Question #11

Suppose  $x = 1$ ,  $y = 2$ , and  $z = 1$ . What will be displayed by the following statement?

```
if x > 0:  
    print("***", y, end=" ")  
if z > 0:  
    print("$$$ ", y, end=" ")
```

- a) \*\*\* 2
- b) \$\$\$ 2
- c) \*\*\* 2 \$\$\$ 2
- d) \*\*\* \$\$\$

# Question #12

The following code displays \_\_\_\_\_.

```
temperature = 50
if temperature >= 100:
    print("too hot")
else:
    print("just right")
```

- a) too hot
- b) too cold
- c) just right
- d) too hot  
just right

# Question #13

The following code displays \_\_\_\_\_.

```
temperature = 50
if temperature >= 100:
    print("too hot")
elif temperature <= 40:
    print("too cold")
else:
    print("just right")
```

- a) too hot
- b) too cold
- c) just right
- d) too hot  
too cold  
just right



# Question

## #14

Suppose  $x = 1$ ,  $y = -1$ , and  $z = 1$ . What will be displayed by the following statement?

```
if x > 0:
    if y > 0:
        print("x > 0 and y > 0")
elif z > 0:
    print("x < 0 and z > 0")
```

- a)  $x > 0$  and  $y > 0$
- b)  $x < 0$  and  $z > 0$
- c)  $x < 0$  and  $z < 0$
- d) Nothing displayed

# Question #15

Suppose income is 4001, what will be displayed by f the following code?

```
if income > 3000:  
    print("Income is greater than 3000")  
elif income > 4000:  
    print("Income is greater than 4000")
```

- a) Income is greater than 3000
- b) Income is greater than 3000 followed by Income is greater than 4000
- c) Income is greater than 4000
- d) Income is greater than 4000 followed by Income is greater than 3000

# Question #16

Suppose you write the code to display "Cannot get a driver's license" if age is less than 16 and "Can get a driver's license" if age is greater than or equal to 16. **Which of the following code is correct?**

```
I:  
if age < 16:  
    print("Cannot get a driver's license")  
if age >= 16:  
    print("Can get a driver's license")
```

```
II:  
if age < 16:  
    print("Cannot get a driver's license")  
else:  
    print("Can get a driver's license")
```

```
III:  
if age < 16:  
    print("Cannot get a driver's license")  
elif age >= 16:  
    print("Can get a driver's license")
```

```
IV:  
if age < 16:  
    print("Cannot get a driver's license")  
elif age == 16:  
    print("Can get a driver's license")  
elif age > 16:  
    print("Can get a driver's license")
```

- a) I and II
- b) II and III
- c) I, II, and III
- d) All correct

# Question

## #17

Suppose you write the code to display "Cannot get a driver's license" if age is less than 16 and "Can get a driver's license" if age is greater than or equal to 16. **Which of the following code is the best?**

```
I:  
if age < 16:  
    print("Cannot get a driver's license")  
if age >= 16:  
    print("Can get a driver's license")
```

```
II:  
if age < 16:  
    print("Cannot get a driver's license")  
else:  
    print("Can get a driver's license")
```

```
III:  
if age < 16:  
    print("Cannot get a driver's license")  
elif age >= 16:  
    print("Can get a driver's license")
```

```
IV:  
if age < 16:  
    print("Cannot get a driver's license")  
elif age == 16:  
    print("Can get a driver's license")  
elif age > 16:  
    print("Can get a driver's license")
```

- a) I
- b) II
- c) III
- d) IV

# Question #18

Analyze the following code:

Code 1:

```
if number % 2 == 0:  
    even = True  
else:  
    even = False
```

Code 2:

```
even = number % 2 == 0
```

- a) Code 1 has compile errors.
- b) Code 2 has compile errors.
- c) Both Code 1 and Code 2 have compile errors.
- d) Both Code 1 and Code 2 are correct, but Code 2 is better.

# Question #19

Which of the Boolean expressions below is incorrect?

- a) `True and 3 >= 4`
- b) `!(x > 0) and (x > 0)`
- c) `(x != 0) or (x == 0)`
- d) `(-10 < x < 0)`

# Question #20

Which of the Boolean expressions below is incorrect?

- a) `True and 3 ==> 4`
- b) `not (x > 0) and (x > 0)`
- c) `(x != 0) or (x == 0)`
- d) `(-10 < x < 0)`

# Question #21

Which of the Boolean expressions below is incorrect?

- a) `True and 3 >= 4`
- b) `not (x > 0) and (x > 0)`
- c) `(x != 0) or (x = 0)`
- d) `(-10 < x < 0)`



# Question #22

Given  $|x - 2| \leq 4$ , Which of the following is true?

- a)  $x - 2 \leq 4$  and  $x - 2 \geq 4$
- b)  $x - 2 \leq 4$  and  $x - 2 > -4$
- c)  $x - 2 \leq 4$  and  $x - 2 \geq -4$
- d)  $x - 2 \leq 4$  or  $x - 2 \geq -4$

# Question #23

Given  $|x - 2| \geq 4$ , Which of the following is true?

- a)  $x - 2 \geq 4$  and  $x - 2 \leq -4$
- b)  $x - 2 \geq 4$  or  $x - 2 \leq -4$
- c)  $x - 2 \geq 4$  and  $x - 2 < -4$
- d)  $x - 2 \geq 4$  or  $x - 2 \leq -4$

# Question #24

Assume  $x = 4$  and  $y = 5$ , Which of the following is true?

- a)  $x < 5$  and  $y < 5$
- b)  $x < 5$  or  $y < 5$
- c)  $x > 5$  and  $y > 5$
- d)  $x > 5$  or  $y > 5$

# Question #25

Assume  $x = 4$  and  $y = 5$ , Which of the following is true?

a) `not (x == 4)`

b) `x != 4`

c) `x == 5`

d) `x != 5`

# Question #26

Which of the following is equivalent to  $x \neq y$ ?

- a) `not (x == y)`
- b) `x > y and x < y`
- c) `x == y or x == y`
- d) `x >= y or x <= y`

# Question #27

Which of the following is equivalent to  $x \neq y$ ?

- a) `not (x != y)`
- b) `x > y and x < y`
- c) `x > y or x < y`
- d) `x >= y or x <= y`

# Question #28

What is  $y$  after the following statement is executed?

```
x = 0  
y = 10 if x > 0 else -10
```

- a) -10
- b) 0
- c) 10
- d) 20

# Question #29

Analyze the following code fragments that assign a boolean value to the variable `even`.

**Code 1:**

```
if number % 2 == 0:  
    even = True  
else:  
    even = False
```

**Code 2:**

```
even = True if number % 2 == 0 else False
```

**Code 3:**

```
even = number % 2 == 0
```

- a) Code 3 has a syntax error, because you attempt to assign `number` to `even`.
- b) All three are correct, but Code 1 is preferred.
- c) All three are correct, but Code 2 is preferred.
- d) All three are correct, but Code 3 is preferred.



# Question

## #30

What will be displayed by the following code?

```
isCorrect = False  
print("Correct" if isCorrect else "Incorrect")
```

- a) Correct
- b) Incorrect
- c) Nothing
- d) Correct Incorrect

# Question #31

The order of the precedence (from high to low) of the operators +, \*, and, or is:

- a) and, or, \*, +
- b) \*, +, and, or
- c) \*, +, or, and
- d) or, and, \*, +

# Question #32

Which of the following operators are right-associative.

a)  $*$

b)  $+$

c) and

d)  $=$

# Question #33

What is the value of the following expression?

True or True and False

- a) True
- b) False

# Question

## #34

Which of the following statements are True?

- a)  $(x \geq 0 \text{ and } x \leq 10)$  is same as  $(x > 0 \text{ and } x < 10)$
- b)  $(x > 0 \text{ and } x < 10)$  is same as  $(x > 0 \text{ or } x < 10)$
- c)  $(x > 0 \text{ or } x < 10 \text{ and } y < 0)$  is same as  $(x > 0 \text{ or } (x < 10 \text{ and } y < 0))$
- d)  $(x > 0 \text{ or } x < 10 \text{ and } y < 0)$  is same as  $((x > 0 \text{ or } x < 10) \text{ and } y < 0)$

# Chapter 5: Loops

## Questions

# Question #35

How many times will the following code print "Welcome to Python"?

```
count = 0
while count < 10:
    print("Welcome to Python")
    count += 1
```

- a) 11
- b) 9
- c) 0
- d) 10

# Question #36

What is the output of the following code?

```
x = 0
while x < 4:
    x = x + 1
print("x is", x)
```

- a) x is 0
- b) x is 1
- c) x is 3
- d) x is 4



# Question #37

Analyze the following code.

```
count = 0
while count < 100:
    # Point A
    print("Welcome to Python!")
    count += 1
    # Point B
# Point C
```

- a) `count < 100` is always True at Point A
- b) `count < 100` is always True at Point B
- c) `count < 100` is always False at Point B
- d) `count < 100` is always True at Point C

# Question #38

Analyze the following code.

```
count = 0
while count < 100:
    # Point A
    print("Welcome to Python!")
    count += 1
    # Point B
# Point C
```

- a) `count < 100` is always True at Point B
- b) `count < 100` is always False at Point B
- c) `count < 100` is always True at Point C
- d) `count < 100` is always False at Point C

# Question

## #39

How many times will the following code print "Welcome to Python"?

```
count = 0
while count < 10:
    print("Welcome to Python")
```

- a) 0
- b) 10
- c) 11
- d) infinite number of times

# Question #40

What will be displayed when the following code is executed?

```
number = 6
while number > 0:
    number -= 3
    print(number, end = ' ')
```

- a) 6 3 0
- b) 6 3
- c) 3 0
- d) 0 -3

# Question

## #41

Analyze the following statement:

```
sum = 0
for d in range(0, 10, 0.1):
    sum += sum + d
```

- a) The program has a syntax error because the range function cannot have three arguments.
- b) The program has a syntax error because the arguments in the range must be integers.
- c) The program runs in an infinite loop.
- d) The program runs fine.

# Question #42

What will be displayed when the following code is executed:

```
sum = 0
for d in range(0, 5, 2):
    sum += sum + d

print(sum)
```

- a) 4
- b) 2
- c) 8
- d) 0

# Question

## #43

Which of the following loops prints "Welcome to Python" 10 times?

A:  

```
for count in range(1, 10):  
    print("Welcome to Python")
```

B:  

```
for count in range(0, 10):  
    print("Welcome to Python")
```

C:  

```
for count in range(1, 11):  
    print("Welcome to Python")
```

D:  

```
for count in range(1, 12):  
    print("Welcome to Python")
```

- a) BD
- b) ABC
- c) BC
- d) AB

# Question #44

The function `range(5)` return a sequence \_\_\_\_\_.

a) 1, 2, 3, 4, 5

b) 0, 1, 2, 3, 4, 5

c) 1, 2, 3, 4

d) 0, 1, 2, 3, 4



# Question

## #45

Which of the following function returns a sequence 0, 1, 2, 3?

- a) `range(0, 3)`
- b) `range(0, 4)`
- c) `range(3)`
- d) `range(5)`

# Question

## #46

Which of the following function returns a sequence 0, 1, 2, 3?

- a) `range(0, 3)`
- b) `range(1, 4)`
- c) `range(3)`
- d) `range(4)`

# Question

## #47

Which of the following function is incorrect?

- a) `range(10, 4, -1)`
- b) `range(1, 3, 1)`
- c) `range(2.5, 4.5)`
- d) `range(4)`

# Question #48

Which of the following loops correctly computes  $1/2 + 2/3 + 3/4 + \dots + 99/100$ ?

```
A:  
sum = 0  
for i in range(1, 99):  
    sum += i / (i + 1)  
  
print("Sum is", sum)
```

```
B:  
sum = 0  
for i in range(1, 100):  
    sum += i / (i + 1)  
  
print("Sum is", sum)
```

```
C:  
sum = 0  
for i in range(1.0, 99.0):  
    sum += i / (i + 1)  
  
print("Sum is", sum)
```

```
D:  
sum = 0  
for i in range(1.0, 100.0):  
    sum += i / (i + 1)  
  
print("Sum is", sum)
```

- a) BCD
- b) ABCD
- c) B
- d) CD

# Question #49

The following loop displays \_\_\_\_\_.

```
for i in range(1, 11):  
    print(i, end = " ")
```

a) 1 2 3 4 5 6 7 8 9 10 11

b) 1 2 3 4 5 6 7 8 9 10

c) 0 1 2 3 4 5 6 7 8 9 10

d) 0 1 2 3 4 5 6 7 8 9 10 11

# Question #50

What is the output for y?

```
y = 0
for i in range(0, 10):
    y += i
print(y)
```

- a) 45
- b) 40
- c) 10
- d) 11

# Question #51

What is the output for y?

```
y = 0
for i in range(0, 10, 2):
    y += i
print(y)
```

- a) 9
- b) 10
- c) 11
- d) 20

# Question #52

What is the output for y?

```
y = 0
for i in range(10, 1, -2):
    y += i
print(y)
```

- a) 10
- b) 40
- c) 30
- d) 20



# Question #53

Given the following four patterns,

Pattern A

```
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
1 2 3 4 5 6
```

Pattern B

```
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

Pattern C

```
1
2 1
3 2 1
4 3 2 1
5 4 3 2 1
6 5 4 3 2 1
```

Pattern D

```
1 2 3 4 5 6
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

Which of the pattern is produced by the following code?

```
for i in range(1, 6 + 1):
    for j in range(6, 0, -1):
        print(j if j <= i else " ", end = " ")
    print()
```

- a) Pattern A
- b) Pattern B
- c) Pattern C
- d) Pattern D

# Question #54

Analyze the following fragment:

```
sum = d = 0
while d != 10.0:
    d += 0.1
    sum += sum + d
```

- a) The program does not run because sum and d are not initialized correctly.
- b) The program never stops because d is always 0.1 inside the loop.
- c) The program may not stop because of the phenomenon referred to as numerical inaccuracy for operating with floating-point numbers.
- d) After the loop, sum is  $0 + 0.1 + 0.2 + 0.3 + \dots + 1.9$

# Question #55

How many times is the print statement executed?

```
for i in range(10):  
    for j in range(10):  
        print(i * j)
```

- a) 100
- b) 20
- c) 10
- d) 45

# Question #56

How many times is the print statement executed?

```
for i in range(10):  
    for j in range(i):  
        print(i * j)
```

- a) 100
- b) 20
- c) 10
- d) 45

# Question #57

Will the following program terminate?

```
balance = 10
while True:
    if balance < 9: break
    balance = balance - 9
```

- a) Yes
- b) No

# Question #58

What is sum after the following loop terminates?

```
sum = 0
item = 0
while item < 5:
    item += 1
    sum += item
    if sum > 4: break
print(sum)
```

- a) 5
- b) 6
- c) 7
- d) 8

# Question #59

What is sum after the following loop terminates?

```
sum = 0
item = 0
while item < 5:
    item += 1
    sum += item
    if sum >= 4: continue
print(sum)
```

- a) 15
- b) 16
- c) 17
- d) 18

# Question #60

Will the following program terminate?

```
balance = 10
```

```
while True:  
    if balance < 9: continue  
    balance = balance - 9
```

- a) True
- b) False



# Question #61

What will be displayed by after the following loop terminates?

```
number = 25
isPrime = True
i = 2
while i < number and isPrime:
    if number % i == 0:
        isPrime = False
    i += 1
print("i is", i, "isPrime is", isPrime)
```

- a) i is 5 isPrime is True
- b) i is 5 isPrime is False
- c) i is 6 isPrime is True
- d) i is 6 isPrime is False

# Question #62

What will be displayed by after the following loop terminates?

```
number = 25
isPrime = True
for i in range(2, number):
    if number % i == 0:
        isPrime = False
        break

print("i is", i, "isPrime is", isPrime)
```

- a) i is 5 isPrime is True
- b) i is 5 isPrime is False
- c) i is 6 isPrime is True
- d) i is 6 isPrime is False

# Question #63

What is the number of iterations in the following loop:

```
for i in range(1, n):  
    # iteration
```

- a)  $2*n$
- b)  $n$
- c)  $n - 1$
- d)  $n + 1$

# Question #64

What is the number of iterations in the following loop:

```
for i in range(1, n + 1):  
    # iteration
```

- a)  $2 * n$
- b)  $n$
- c)  $n - 1$
- d)  $n + 1$

# Question #65

Suppose the input for number is 9. What will be displayed by the following program?

```
number = eval(input("Enter an integer: "))

isPrime = True
for i in range(2, number):
    if number % i == 0:
        isPrime = False

print("i is", i)

if isPrime:
    print(number, "is prime")
    break
else:
    print(number, "is not prime")
```

- a) i is 3 followed by 9 is prime
- b) i is 3 followed by 9 is not prime
- c) i is 2 followed by 9 is prime
- d) i is 2 followed by 9 is not prime

# Solutions

Question #	Correct Answer
1	B
2	C
3	A
4	C
5	B
6	C
7	B
8	C
9	B
10	B

Question #	Correct Answer
11	C
12	C
13	C
14	D
15	A
16	D
17	B
18	D
19	B
20	A

# Solutions

Question #	Correct Answer
21	C
22	C
23	B
24	B
25	D
26	A
27	C
28	A
29	D
30	B

Question #	Correct Answer
31	B
32	D
33	A
34	C
35	D
36	D
37	A
38	D
39	D
40	C

# Solutions

Question #	Correct Answer
41	B
42	C
43	C
44	D
45	B
46	D
47	C
48	C
49	B
50	A

Question #	Correct Answer
51	D
52	C
53	C
54	C
55	A
56	D
57	A
58	B
59	A
60	B



# Solutions

Question #	Correct Answer
61	D
62	B
63	C
64	B
65	C

Question #	Correct Answer