Student Name : _____
Student ID : _____

CITY UNIVERSITY OF HONG KONG (DongGuan Campus)

Course code & title : CS1302 Introduction to Computer Programming

Session : Midterm exam Semester B 2024-25

Time allowed : 90 minutes (Part 1-3: 45 minutes, Part 4: 45 minutes)

This paper has **6** pages (including this page).

Note:

1. Answer ALL the questions in the space provided within each question.

Question	Part 1 (10 marks)	Part 2 (15 marks)	Part 3 (10 marks)	Part 4 (25 marks)	Total (60)
Marks					

Part 1-3 need to be written on the exam papers and Part 4 needs to be submitted via Canvas->Assignment->Midterm exam.

2. Do NOT remove the staple or separate the paper.
3. This question paper should NOT be taken away.

Remarks:

For all written code required by the questions:

1. You should give precise Python code with proper programming styles, in particular, appropriate code design, naming and code formatting. Marks may be deducted for redundant or unnecessary code.
2. Unless specifically mentioned, modules/libraries/functions other than built-in functions, math modules are not allowed.

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*This is a **closed-book** examination.*

No materials or aids are allowed during the whole examination. If any unauthorized materials or aids are found on a candidate during the examination, the candidate will be subject to disciplinary action.

Part 1 (10 marks)

Multiple choice questions (1 mark for each question).
Note that there may be more than 1 correct option for each question, and you must select all the correct options to get the full mark. There is no partial mark such as 0.5.

(1) Which of the following statements about Python identifiers is/are correct?

A. Identifiers can start with a digit
B. Identifiers can contain special characters like @ or $
C. print is a valid identifier
D. class is a valid identifier

Answer: C

(2) Which of the following expressions will evaluate to True?

A. 5 % 2 == 0
B. 1 + 1 == 2 and 2 * 2 == 4
C. not (False or True)
D. 3 > 2 > 1

Answer: B,D

(3) Which of the following statements about Python functions is/are correct?

A. A function can return multiple values.
B. A function without a return statement will return None.
C. The pass statement in a function will cause it to return True.
D. A function must have at least one parameter.

Answer: A,B

(4) Which of the following statements about the Python loops is/are correct?

A. A for loop can iterate over a range of numbers.
B. A while loop will always execute at least once.
C. enumerate() method adds a counter to an iterable and returns it in a form of (index, element).
D. The continue statement skips the rest of current iteration and starts the next iteration.

Answer: A,C,D

(5) Which of the following is/are the correct way to write a for loop that iterates over a range of numbers from 1 to 10?

A. for i in range(10):
B. for i in range(1, 10):
C. for i in range(1, 11, 1):
D. for i in range(0, 11):

Answer: C

(6) Which of the following Python code successfully assign(s) the string "11" to x?

A. x = 10 + 1
B. x = "1" * 2
C. x = "1"+"1"
D. x = "111" – "1"

Answer: B,C

(7) What is the output of the following Python code?

```
unit = 13.0201

def format_str(x):
    return "CS|{:08.2f}|".format(x)

print(format_str(unit))
```

A. CS|{:08.2f}|
B. CS|13.0201|
C. SyntaxError
D. CS|00013.02|

Answer: D

(8) What is the output of the following Python code:

```
x = 5
y = 10
if x < y:
     print("1", end=" ")
     y = x
if x == y:
     print("2", end=" ")
     y = 10
elif x < y:
     print("3", end=" ")
else:
     print("4", end=" ")
```

A. 1 2 4
B. 1 3
C. 1 2 3
D. 1 2

Answer: D

(9) What is the output of the following Python code:

```
x=10
while x > 5:
    print(x, end="_")
    x -= 1
```

A. 10_9_8_7_6_5_
B. 10_9_8_7_6_
C. 9_8_7_6_5_
D. 10_9_8_7_6_5

Answer: B

(10) What is the output of the following Python code:

```
a = 4
b = a + 2 * 3 ** 2 / 2 * (a := 3)
print(b)
```

A. 7
B. 30
C. 31
D. 58

Answer: C

Part 2 (15 marks)

Please give the output of the following programs in the correct format. Note that you need to fill in "Error" if there is an error message. For example:

Program example:

```
print(1)
print(1
```

Output:

```
1
Error
```

Program 1 (2 marks):

```
x, y = 10, 3
print(x // y - x % y)
```

Output:

```
2
```

Program 2 (3 marks):

```
x = 6
y = 4
while x > y:
    x -= 3
    y -= 2
    if x < y: break
    if x == y: continue
    print(x, y)
else:
    print(x / y)
```

Output:

```
3 2
Error
```

Program 3 (7 marks, 1 mark for each print()):

```
print(False or not True and True and True or False and False)

print(True and True or False or not True)

print(True == 2 or False == None)

print(2**2*2**2**2)

print('ab' == 'a'+'b' != 'CD' > 'C')

print(5 % 4 ** 2 // 2)

print(round(123.456,2))
```

Output:

```
False
True
False
64
True
2
123.46
```

Program 4 (3 marks, no partial mark for this question):

```
def my_function(n):
    a, b = 0, 1
    for i in range(n):
        print(a)
        a, b = b, a + b
    return a

print(my_function(5))
```

Output:

```
0
1
1
2
3
5
```

Part 3 (10 marks)

1. Please complete the following table which converts the same number into different representation systems. (each space 0.5 mark, in total 6 marks)

Binary (base-2)	Octal (base-8)	Decimal (base-10)	Hexadecimal (base-16)
100011	43	35	23
11110	36	30	1E
11010	32	26	1A
10010	22	18	12

2. Short-circuit evaluation is a feature in Python that optimizes the evaluation of logical expressions. It allows the interpreter to stop evaluating a logical expression as soon as the result is determined, without needing to evaluate the entire expression. Give the output after running the following code.

Code example 1 (1 mark)

```
print(print('A') or False and print('B'))
```

```
Output:
A
False
```

Code example 2 (1 mark)

```
True and print('False') or False or print('True')
```

```
Output:
False
True
```

3. Give the output of the following code.

Code example 1 (1 mark)

```
for num in 1,3,5,6,8,9:
    if num % 2 == 0:
        print(num)
        break
else:
    print("No even number found!")
```

```
Output:
6
```

Code example 2 (1 mark)

```
x = 5
while x > 0:
    if x == 3:
        print("Break the loop")
        break
    print(f"x is: {x}")
    x -= 1
else:
    print("Loop ended without a break!")
```

```
Output:
x is: 5
x is: 4
Break the loop
```

After submitting parts 1-3, please go to Canvas→CS1302→Files→Midterm exam to download part4_coding.ipynb notebook. Launch jupyterlab in the lab computers, complete and submit your notebook to Canvas→Assignment→Midterm exam

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