ITS100 Midterm Exam

1. Email *

2. Student ID *

3. Full Name *

Part 1: Multiple-Choice Questions

Choose only one answer

4. Evaluate the following Python arithmetic expression: (3*(1+-2)**2 +-2*(2**2)) *

Mark only one oval.

1

5

-5

Error

5. You are writing an application that uses the pow function. The program must reference the function using the name power. You need to import the function. Which code segment should you use? *

Mark only one oval.

import math.pow as power

import pow from math as power

from math import pow as power

from math.pow as power

6. Which of the following is an invalid statement? *

Mark only one oval.

- ◯ abc = 500,000
- ◯ a b c = 500 1000 2000
- ◯ a,b,c = 500, 1000, 2000
- ◯ a_b_c = 500,000

7. What is the output of the following piece of code? *

1	x = "ITS100"
2	y = 'Python'
3	z= "Easy "
4	print (x, y, z, end=▋)

Mark only one oval.

- ◯ ITS100 Python Easy'
- ◯ ITS100 Python Easy '
- ◯ ITS100' Python' Easy'
- ◯ Error

8. You are writing code that generates a random integer with a minimum value of 2 and a maximum value of 7. *
Which code should you use?

Mark only one oval.

- ⬭ random.randint(2, 7)
- ⬭ random.randint(2, 8)
- ⬭ random.random(2, 7)
- ⬭ random.randrange(2, 7, 1)

9. What is the output of the following piece of code? *

```
1   a = "123".isnumeric()
2   b = "-123".isnumeric()
3   c = "IV".isnumeric()
4   print(a,b,c)
```

Mark only one oval.

- ⬭ True False True
- ⬭ True False False
- ⬭ TrueFalseTrue
- ⬭ TrueFalseFalse

10. What is the output of the following piece of code? *

```
1   a = 2.1
2   b = 1.23
3   c = -5.12345678
4   print("%d_%s_%.5f" % a,b,c)
```

Mark only one oval.

○ 2_1.23_-5.12345

○ 2.1_1.23_-5.12346

○ 2_1.23_-5.12346

○ Error

11. You need to accept 2 inputs from the user separated by space. Which code should you write? *

Mark only one oval.

○ x y = input("please type 2 input:")

○ x y = input("please type 2 input:").split()

○ x,y = input("please type 2 input:")

○ x,y = input("please type 2 input:").split()

12. What is the output of [0, 1, 2] + [3, 4, 5]? *

Mark only one oval.

- ⬭ [0, 1, 2, 3, 4, 5]
- ⬭ [0, 1, 2],[3, 4, 5]
- ⬭ [3, 5, 7]
- ⬭ None of the above

13. What is the output of the following piece of code if a given input is a string "1"? *

```
1   a = 2
2   b = input("Enter the number: ")
3   print("The output = %.2f" % float(a*b))
```

Mark only one oval.

- ⬭ 2.00
- ⬭ 2
- ⬭ 11.00
- ⬭ Error

14. What is the output of the following piece of code? *

```
1   if (1 and 2 and true):        True
2       print('foo', end=",")
3   print("end")
```

Mark only one oval.

- ⬭ end
- ⬭ foo,
- ⬭ foo,end
- ⬭ Error

15. What is the output of the following piece of code? *

```
1   import numpy as np

2   v =np.arange(1,4)

3   v*=2

4   print(v)
```

Mark only one oval.

- [1 2 3 4]
- [2 4 6 8]
- [2 4 6]
- Error

16. What is the output of the following piece of code? *

```
1   a=2
2   if a>0: a+1
3   else: a-=1
4   a-1
5   print(a)
```

Mark only one oval.

- ○ 3
- ○ 2
- ○ 1
- ○ Error

17. What is the output of the following piece of code? *

```
1  for x in ["Alice", "Bob", "Cathy"]:
2      print("x", end=",")
3  print("end")
```

Mark only one oval.

○ Alice,Bob,Cathy,end

○ x,x,x,end

○ 1,2,3,end

○ Error

18. What is the output of the following piece of code? *

```
1   my_string = "iamok"

2   i = "i"

3   for i in my_string:

4       if (i>"i"):

5           print(i, end =" ")
```

Mark only one oval.

- ( ) i a m o k
- ( ) iamok
- ( ) mok
- ( ) amok

19. Which of the followings is the hardware component that performs arithmetic operations? *

   Mark only one oval.

   ( ) ALU

   ( ) Main Memory

   ( ) Control Unit

   ( ) Registers

   ( ) Cache

20. Which of the followings is the fastest memory? *

   Mark only one oval.

   ( ) Registers

   ( ) Static RAM (SRAM)

   ( ) Dynamic RAM (DRAM)

   ( ) L1 Cache Memory

   ( ) L3 Cache Memory

21. Which of the followings is a valid Python variable name? *

Mark only one oval.

○ 123abc

○ Hello,World

○ x.1

○ _x

○ None of the above are valid

22. The following program outputs "10 13.00 0.769231". Which of the followings is the most appropriate for line 4? *

```
1   a = 10
2   b = 13
3   c = a/b
4   . . . . . . . . . . . . . . . . .
```

Mark only one oval.

- ⬭ print("%d %.2d %.5f" % (a, b, c))
- ⬭ print("%d %.2d %f" % (a, b, c))
- ⬭ print("%d %.2f %.6f" % a, b, c)
- ⬭ print("%d %.2f %f" % (a, b, c))
- ⬭ print("%d %d %f", a, b, c)

23. Which of the followings is the most appropriate for line 1? *

```
1   . . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
2   x, y = input("Input x and y: ").split()
3   x, y = int(x), int(y)
4   output = (m.sqrt(x) + m.pow(x, 5))/m.exp(x)
5   print("Output = %.2f" % output)
```

Mark only one oval.

○ import m

○ from math import m

○ from math import *

○ import math as m

○ from math as m

24. Which of the following functions checks if a string contains only digits? *

Mark only one oval.

○ str.isnumeric()

○ str.isalpha()

○ str.isupper()

○ str.int()

○ str.isalnum()

25. Which of the following expressions is True given that x=True, y=15, and z=False? *

Mark only one oval.

○ not x

○ x or z

○ x and y > 100

○ not z and not x

○ x == False

26. What is the output of the following program? *

```
1    a, b, c = 5, 7, 2
2    m = a
3    if b < m:
4        m = b
5    if c < m:
6        m = c
7    print(m)
```

Mark only one oval.

- ⬭ 2
- ⬭ 5
- ⬭ 7
- ⬭ 9
- ⬭ 12

27. What does the following program do? *

```
1   x, y, z = input("Input three numbers: ").split()
2   x, y, z = int(x), int(y), int(z)
3   a = x - y
4   b = y - z
5   c = z - x
6   if a*b > 0:
7       output = y
8   elif b*c > 0:
9       output = z
10  else:
11      output = x
12  print("Output =", output)
```

Mark only one oval.

- ◯ Find the total of x, y and z
- ◯ Find the median of x, y and z
- ◯ Find the signs of x, y and z
- ◯ Find the maximum of x, y and z
- ◯ Find the minimum of x, y and z

28. How many lines are there in the output of the following program? *

```
1   for i in range(100):
2       for j in range(20):
3           print("*", end=" ")
4           if j % 5 == 0:
5               print("#")
```

Mark only one oval.

- ( ) 2000
- ( ) 500
- ( ) 400
- ( ) 200
- ( ) 100

29. The following program randomly generates a password starting with an uppercase letter followed by two lowercase letters and exactly four digits, such as "Bmx5381", "Khw2299". Which of the followings is the most appropriate for line 6? *

```
1  import random
2
3  up = "ABCDEFGHIJKLMNOPQRSTUVWXYZ"
4  low = "abcdefghijklmnopqrstuvwxyz"
5
6  passwd = random.choice(up) + random.choice(low) + .........
7  print("Password =", passwd)
```

Mark only one oval.

○ random.choice(low) + random.randint(1000, 9999)

○ random.randint(1000, 9999)

○ random.choice(low) + int(random.randint(1000, 9999))

○ str(random.choice(low)) + str(random.randint(1000, 9999))

○ int(random.choice(low)) + int(random.randint(1000, 9999))

30. How many asterisks are printed by the following program? *

```
1  for i in [1, 10, 1]:
2          for j in range(10):
3              print("*", end="")
4          print("*")
```

Mark only one oval.

- ⬭ 90
- ⬭ 33
- ⬭ 3
- ⬭ 99
- ⬭ 10

31. Which of the followings is the most appropriate for line 4 to make the program output the sum of all digits of n?   *
In this case, the program should output 31 (which is 2+9+0+3+2+5+6+4).

```
1  n = "29032564"
2  s = 0
3  for i in n:
4     . . . . . . . . . . . . .
5  print(s)
```
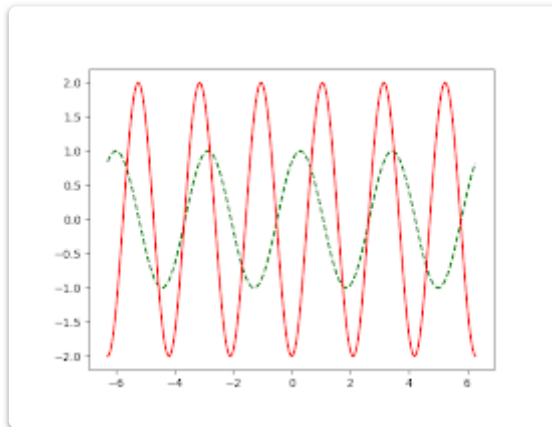
Mark only one oval.

- ⬭ s += int(i)
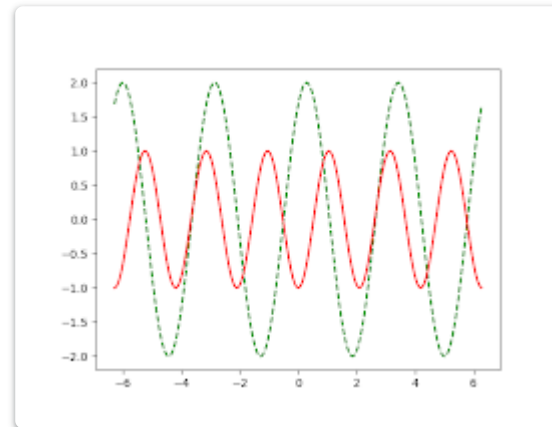- ⬭ s += i
- ⬭ s = s + 1
- ⬭ s = s + n
- ⬭ sum(i)

32. What is the output of the following program? *

```
1  import numpy as np
2  import matplotlib.pyplot as plt
3  import math as m
4
5  x = np.arange(-2*m.pi, 2*m.pi, 0.05)
6  y1 = np.sin(2*x+1)
7  y2 = 2*np.cos(3*x+m.pi)
8
9  plt.plot(x, y1, color="green", linestyle="dashed")
10  plt.plot(x, y2, color="red", linestyle="solid")
11  plt.savefig("main.png")
```
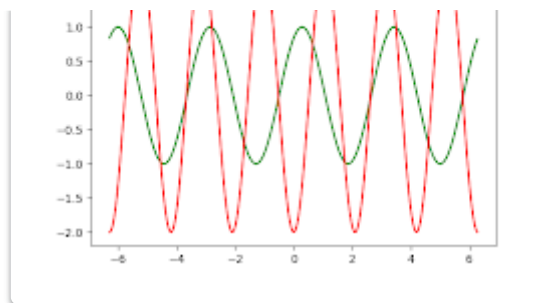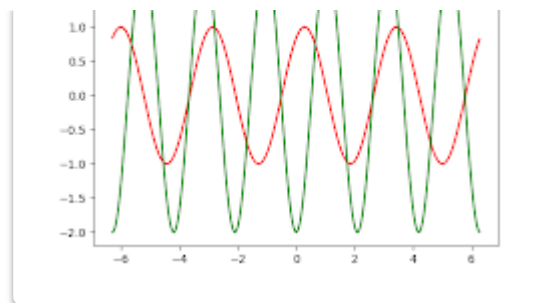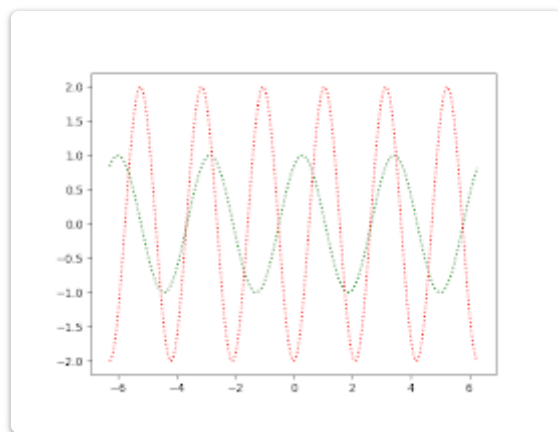
Mark only one oval.

Plot E

Plot B

○ Plot C

○ Plot D

○ Plot A

33. What is the output of the following program when a user inputs "1 A"? *

```
1   a, b = input("Input two integers: ").split()
2   if a.isnumeric() or b.isnumeric():
3       a, b = int(a), int(b)
4       print("Output =", (a+b))
5   else:
6       print("Both inputs must be integers.")
```

Mark only one oval.

○ Both inputs must be integers

○ 1

○ 66

○ An error message

○ 1A

Part 2: Short-answer questions

Provide only one answer in the blank space. Write the answer in your own words. Plagiarism will be checked.

34. What is an output of the following program? If there is an error message, what cause it? *

```
1   bool1 = True and False
2   bool2 = (8//3 == 8%3)
3   print(bool1 or bool2)
```

True

35. What is an output of the following program? If there is an error message, what cause it? *

```
1   boolExprs = [2 > 1, 0 == 0, True, False, True or False, not False, 1 and 2]
2   trueCount = 0
3   for expr in boolExprs:
4       if expr:
5           trueCount += 1
6   print(trueCount)
```

6

36. What is an output of the following program? If there is an error message, what cause it? *

```
1   msg = 'Hello I am groot 3000'.split(" ")
2   pattern = 'am'
3   for word in msg:
4       if word == pattern:
5           print(word,end="")
6       if word > pattern:
7           print("more",end="")
8       else:
9           print(".",end="")
10  print("#")
```

lowercase letters have a higher ASCII value than uppercase letters

numbers have lower ASCII values than both uppercase and lowercase letters

number < UPPER < lower

..am.more.#

37. What is an output of the following program? If there is an error message, what cause it? *

1	msg = "Python is an interpreted high-level general-purpose programming language"
2	num = 15
3	longList = []
4	shortestword=""
5	sList = msg.lower().split()
6	for word in sList:
7	if len(word) >= num:
8	longList.append(word)
9	if shortestword=="" or (len(shortestword) >=len(word)):
10	shortestword=word
11	print(shortestword,longList[0])

an general-purpose

38. What is an output of the following program? If there is an error message, what cause it? *

```
1  items = [10,20,30,40,50]
2  subtotal =0
3  for item in items:
4      subtotal += item
5  tax = 0.07 * subtotal
6  print("Subtotal:", subtotal)
7  print("Tax: %.2f" % tax)
8  print("Total: %.2f" % subtotal+tax)
```

Subtotal: 150
Tax: 10.50
Total: 160.50

Part 3: Short-answer
Questions

Provide only one answer in the blank space. Write the answer in your own words.
Plagiarism will be checked.

39. What is the output of the following program when you input your student ID? *

6622770368

```
1   n = input("Input a number: ")
2   j = 1
3   t = 0
4   u = ''
5   for i in n:
6           if i == '6':
7               t += 1
8           if j == 8 or j == 9:
9               u += i
10          j += 1
11  output = str(t) + u
12  print("Output:", output)
```

Output: 336

40. What does the following program do? Explain in plain English within 10 words. Exceeding 10 words results in 0   *
    point.

```python
n = input("n=")
if n.isnumeric():
    n = int(n)
    s = 0
    for i in range(5):
        s += n%10
        n //= 10
    print(s%3)
```

adds digits backwards then prints remainder when divide by 3.

41. What should be in line 5 and 6 so that the following program outputs (n**0) + (n**1) + (n**2) + ... + (n**n)? *

```
1   n = input("n=")
2   if n.isnumeric:
3       n = int(n)
4       s = 0
5       ........................
6       ........................
7   print("sum=", s)
```

for i in range(n):
    s += (n**i)

42. What does the following program do? Explain in plain English within 10 words. Exceeding 10 words results in 0 *
point.

```
1  n = input("Input an integer: ")
2  c = 0
3  if n.isnumeric():
4      for d in n:
5          if int(d)%2 == 0:
6              c += 1
7  print("Output:", c)
```

it counts the number of even numbers in the input.

43. What does the following program do? Explain in plain English within 10 words. Exceeding 10 words results in 0 point. *

```python
1   y, m, d = input("Input a date in YYYY-MM-DD format: ").split("-")
2   if y.isnumeric() and m.isnumeric() and d.isnumeric():
3       y, m, d = int(y), int(m), int(d)
4       if y <= 2021:
5           if m==1 or m==3 or m==5 or m==7 or m==8 or m==10 or m==12:
6               if 1 <= d <= 31:
7                   output = True
8               else:
9                   output = False
10          elif m == 2:
11              if ((y % 4 == 0 and y % 100 != 0) or (y % 400 == 0)) and (1 <= d <= 29):
12                  output = True
13              elif 1 <= d <= 28:
14                  output = True
15              else:
16                  output = False
17          elif 1 <= d <= 30:
18              output = True
19          else:
20              output = False
21      else:
22          output = False
23
24  if output:
25      print("Output: valid")
26  else:
27      print("Output: invalid")
```

checks and prints the validity of the entered date.