Name: ____________________________________________

Section: ___________________________ Date: ________________

INSTRUCTIONS:

(1) DO NOT OPEN YOUR EXAM BOOKLET UNTIL YOU HAVE BEEN TOLD TO BEGIN.

(2) Please fill in the requested information at the top of this exam booklet.

(3) Use a #2 pencil to encode answers on the OMR form (bubble sheet).

(4) Please encode the following on the OMR form:
  – Last name and first initial
  – MSU PID
  – Section number (007, 008, 009, 010, 011, or 012)
  – Exam form (1 A)

(5) Please sign the OMR form.

(6) Only answers recorded on your OMR form will be counted for credit. Completely erase any responses on the OMR form that you wish to delete.

(7) You may not ask questions once the examination has begun.

  If there is a structural problem with your exam booklet (e.g., a missing or poorly printed page), please raise your hand; a proctor will take care of it.

  If a question is ambiguous or contains a typographic error, write your interpretation of the question on the same page as the question; then put a note on the cover sheet of your exam booklet.

(8) Choose the single best alternative for each question, even if you believe the question is ambiguous or contains an error. If a question has more than one best answer, credit will be given for any of the correct answers provided that you marked only one answer.

(9) This exam booklet contains 30 questions, each of which will be weighted equally. The total points for the exam is 150 points (15% of your course grade).

(10) You may use one 8.5” x 11” note sheet and a paper dictionary during the exam. No other reference materials, calculating devices, or electronic devices may be used during the examination.

(11) The exam ends at 2:00 pm. You must turn in this exam booklet, the OMR form, your note sheet, and your scrap paper before leaving. Put your name on anything that you would like to have returned. When leaving, please be courteous to those still taking the exam.
The answers marked above are the "best answers". Partial credit was given for some answers that were "almost" correct.

For question 3: 2 pts were given for (a) as the precedence rules were applied correctly; but not the associativity rules. 4 pts were given for (b) as the precedence and associativity rules were applied correctly to calculate the correct value; but the value is a float and it prints as such.

For question 5: 2 pts were given for (c) knowing that exponentiation takes precedence over multiplication; but not that it also takes precedence over negation (which is, after all, just multiplication by -1).

For question 23: 2 pts were given for (a) as the correct value of v was known; the mistake was not executing the else on normal exit from the for loop.

For question 29: There are two 'best' answers: (c) or (d). You can’t tell by looking at how a text editor renders the input file if there is a new line after the last line or if it is the end of the file. If there is a new line, then the program returns 40; if there is none, then the program returns 39. Answer (b) received 2 pts for knowing what the program did, but not knowing that lines read from a file include a "\n" character.
(1) After the assignment \( x = 2 \), which of the following is a legal Python statement (i.e., does not produce an error when executed)?

(a) \( y = \text{input('a', 'b')} \)  
(b) \( y = \text{input( x )} \)  
(c) \( y = \text{input( 2*str(x) )} \)  
(d) \( y = \text{input( What is x? )} \)  
(e) None of (a)–(d).

(2) Which claim about the following Python statement is correct: \( A = 0 \)

(a) When executed, it produces a \text{NameError} if \( A \) is not in the global namespace.  
(b) When executed, it returns \text{True} if \( A \) references the value 0.  
(c) When executed, it produces a side effect.  
(d) When executed, it returns the value 0.  
(e) None of (a)–(d) is correct.

(3) What is displayed when the following statement is executed:
\[
\text{print( 1 + 3 / 2 * 2 )}
\]

(a) 1.75  
(b) 4  
(c) 4.0  
(d) 1  
(e) None of (a)–(d)

(4) After the assignments \( x = 13 \) and \( y = 5 \), what is displayed when the following statement is executed: \( \text{print( x \% y * 2 )} \)

(a) 1  
(b) 3  
(c) 4  
(d) 6  
(e) None of (a)–(d)

(5) After the assignments \( y = 5 \) and \( z = 2.3 \), what is displayed when the following statement is executed: \( \text{print( int(z) * -y ** 2 )} \)

(a) -100  
(b) 100  
(c) 50  
(d) -50  
(e) None of (a)–(d)

(6) After the assignments \( x = 13 \), \( y = 5 \), and \( z = 2.3 \), what is displayed when the following statement is executed: \( \text{print( x + y <= z * x <= x ** 2 )} \)

(a) 169  
(b) False  
(c) True  
(d) An error

(7) After the assignments \( x = 13 \) and \( y = 5 \), what is displayed when the following statement is executed: \( \text{print( y == 5 or x / (y - 5) == 0 )} \)

(a) True  
(b) False  
(c) An error
(8) In Figure 1, what is displayed by the line labelled Line 1?
   (a) 23  (b) 22  (c) 21
   (d) 20  (e) None of (a)–(d)

(9) In Figure 1, what is displayed by the line labelled Line 2?
   (a) 3    (b) 2    (c) 1
   (d) 0    (e) None of (a)–(d)

(10) In Figure 1, what is displayed by the line labelled Line 3?
    (a) 0    (b) 1    (c) 2
    (d) 3    (e) None of (a)–(d)

(11) In Figure 1, what is displayed by the line labelled Line 4?
    (a) 0    (b) 1    (c) 2
    (d) 3    (e) None of (a)–(d)

(12) After the assignment `grtg = "All's""OK"
`, what is displayed by following statement: `print( len(grtg) )`
    (a) 11    (b) 9    (c) 10 strut
    (d) 12    (e) None of (a)–(d)
(13) What is displayed by the following statement:
\[
\text{print( } 2 \times 'Alice' < 'Alphea', 2 \times 'Alice' < 'Al') \] 
(a) False True (b) False (c) False False (d) True False (e) None of (a)–(d)

(14) After the assignment \texttt{sntc = 'A hat has sold.'}, what is displayed by the following statement: \texttt{print( sntc.isalnum(), sntc.islower() )} 
(a) False True (b) True False (c) False False (d) False (e) None of (a)–(d)

(15) After the assignment \texttt{sntc = 'A hat has sold.'}, what is displayed by the following statement: \texttt{print( sntc[3]+sntc[-3] )} 
(a) al (b) a l (c) ho (d) hl (e) None of (a)–(d)

(16) After the assignment \texttt{sntc = 'A hat has sold.'}, what is displayed by the following statement: \texttt{print( sntc[3:-3] )} 
(a) al (b) ao (c) at has sol (d) at has so (e) None of (a)–(d)

(17) After the assignment \texttt{sntc = 'A hat has sold.'}, what is displayed by the following statement: \texttt{print( sntc[-3:3:-1] )} 
(a) los sah t (b) los sah ta (c) at has so (d) A blank line (e) None of (a)–(d)

(18) After the assignment \texttt{sntc = 'A hat has sold.'}, what is displayed by the following statement:
\[
\text{print( sntc.replace(" ", "**").find("as") )} \] # " " contains one space 
(a) -1 (b) 8 (c) 7 (d) 9 (e) None of (a)–(d)
(19) In Figure 2, what is displayed by the line labelled Line 1?

(a) 8  
(b) 4  
(c) 3  
(d) 10  
(e) None of (a)–(d)

(20) In Figure 2, what is displayed by the line labelled Line 2?

(a) 8  
(b) 4  
(c) 5  
(d) 9  
(e) None of (a)–(d)

(21) In Figure 2, what is displayed by the line labelled Line 3?

(a) 0  
(b) 4  
(c) 5  
(d) 9  
(e) None of (a)–(d)

(22) What is displayed by the following program?

```python
import string
x = y = z = 0
text = "The Holy Grail"

while text != "":
    if text[0] not in "aeiou":
        x += 1
    if text[0] in string.ascii_lowercase:
        y += 1
    else:
        z += 1

text = text[1:]
print( x )  # Line 1
print( y )  # Line 2
print( z )  # Line 3
```

(a) 50  
(b) 8  
(c) 32  
(d) 30  
(e) None of (a)–(d)
(23) In Figure 3, what is displayed by the line labelled Line 1?
(a) 8  
(b) 9  
(c) 5  
(d) 8  
(e) None of (a)–(d)

(24) In Figure 3, what is displayed by the line labelled Line 2?
(a) OoLlSs  
(b) Id0ols  
(c) ID00LLSS  
(d) Id0oLlSs  
(e) None of (a)–(d)

(25) In Figure 3, if the comment # REPLACE is replaced with the statement continue, what is displayed by the line labelled Line 2?
(a) OLS  
(b) Id0  
(c) IdOLS  
(d) Idols  
(e) None of (a)–(d)

(26) In Figure 3, if the comment # REPLACE is replaced with the statement break, what is displayed by the line labelled Line 1?
(a) 8  
(b) o 6  
(c) o 7  
(d) s 9  
(e) None of (a)–(d)

(27) In Figure 3, if the comment # REPLACE is replaced with the statement break, what is displayed by the line labelled Line 2?
(a) Id0Ls  
(b) Id0  
(c) Id  
(d) I  
(e) None of (a)–(d)
(28) What is displayed by the following program:

```python
TEMPL = "{:<3}"
for i in range(5):
    if i%3 == 2:
        print( TEMPL.format(i+1) )
    else:
        print( TEMPL.format(i+1), end=':')
```

(a) 1 :2
(b) 1 :2 :3
(c) 1 :
    3 :4
    5
(d) 1 :2 :3 :4 :5
(e) None of (a)–(d)

(29) What is displayed by the program on the left, assuming the file data.txt exists in the same directory as the program and that it has the contents shown on the right (the only spaces in the file are those shown between the words–e.g., there is no space before the first T of any line or after the punctuation):

```python
fobj = open( 'data.txt', 'r')
cnt = 0
for line in fobj:
    cnt += len(line)
print( cnt )
```

To market,
To market,
To buy a fat pig.

(a) 34
(b) 37
(c) 39
(d) 40
(e) None of (a)–(d)

(30) What should the user enter at the prompt to make the following program display the message: Did not get there

```python
a = input( "Enter a number: ")
if a == '1' or '2':
    print( "Got here" )
else:
    print( "Did not get there" )
```

(a) 1
(b) 2
(c) 3
(d) Any of (a)-(c) will make the program display this message
(e) None of (a)-(c) will make the program display this message