Name:____

Section:____________________ **Date:**________________

INSTRUCTIONS:

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

(2) 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).

(3) 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.

(4) 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.

(5) *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. *Provide only one answer.*

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

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

(8) Please encode the following on the OMR form:
– Last name and first initial
– MSU PID
– Exam form (1 A)

(9) Please sign the OMR form.

(10) 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.

(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.

(12) When leaving, please be courteous to those still taking the exam.

Form A

1	2	3	4	5	6	7	8	9	10
A	B	A	A	C	A	A	C	B	B

11	12	13	14	15	16	17	18	19	20
D	C	A	B	B	D	D	A	C	C

21	22	23	24	25	26	27	28	29	30
A	B	C	C	B	C	D	C	CE	E

The answers marked above are the ”best answers”. Partial credit was given for some answers that were ”almost” correct.

For question 29, the intended answer was (c): (a) is not correct because the write method needs to be applied to a file object (not a string); similarly, (b) is incorrect because the file parameter needs to be assigned a file object. But, technically, since the question did not say if the file was later closed, the program could terminate without writing the string to disk. So (e) is an unintended, but equally good answer.

(1) Which of the following statements is correct?

(a) The reason that we can try out lines one at a time by typing them into the Python shell is because Python is an interpreted language.

(b) The reason that we can try out lines one at a time by typing them into the Python shell is because Python is a compiled language.

(c) Some objects created during execution of a Python program have no type.

(d) Python comes with a large set of modules, which a programmer must use; the programmer cannot create their own modules.

(e) All of the above.

(2) If `num` references an integer value and `PROMPT` references a string value, which of the following does *not* produce a side effect?

(a) `ans = input(PROMPT)` (b) `num * PROMPT`
(c) `PROMPT *= num` (d) `print( num )`
(e) None of the above (all produce a side effect).

(3) Which of the following is *not* a legal Python statement?

(a) `input( x = 2 )` (b) `__bye_str = "cheerio"`
(c) `print( +3e-1 )` (d) `HEADER = ("-" + "+") * 5`
(e) None of the above (all are allowable).

(4) After the assignments `x = 2` and `y = 3`, what is returned by `x + y / 2` ?

(a) `3.5` (b) `2.5` (c) `3`
(d) None of (a)–(c)

(5) After the assignments `x = 2` and `y = 3` and `z = 5`, what is returned by `x * y % z` ?

(a) `0` (b) `6` (c) `1`
(d) None of (a)–(c)

(6) After the assignments `x = 2` and `y = 3` and `z = 5`, what is returned by `y - z ** x` ?

(a) `-22` (b) `28` (c) `4`
(d) None of (a)–(c)

(7) After the assignments `x = 2` and `y = 3` and `z = 5`, what is returned by `x + y != z` ?

(a) `False` (b) `True` (c) An error.
(d) None of (a)–(c)

(8) After the assignments `x = 2` and `y = 3` and `z = 5`, what is returned by `y / (x - 2) < z or x == 2` ?
(a) `False` (b) `True` (c) An error.
(d) None of (a)–(c)

(9) After the assignments `x = 2` and `y = 3` and `z = 5`, what is returned by `x == 2 or y / (x - 2) < z` ?
(a) `False` (b) `True` (c) An error.
(d) None of (a)–(c)

(10) After the assignments `x = 2` and `y = 3` and `z = 5`, what is returned by `z == x // y + z < y + z` ?
(a) `False` (b) `True` (c) An error.
(d) None of (a)–(c)

(11) After the assignment `say = "I seek the Grail"`, what is returned by `say[len(say)]` ?
(a) `"I seek the Grail"` (b) `"l"` (c) `""`
(d) An error. (e) None of (a)–(d)

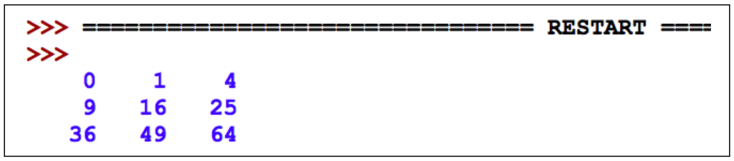
(12) After the assignment `say = "I seek the Grail"`, what is returned by `say[3:-3]` ?
(a) `"seek the Gra"` (b) `""` (c) `"eek the Gr"`
(d) An error. (e) None of (a)–(d)

(13) After the assignment `say = "I seek the Grail"`, what is returned by `say[3:10:3]` ?
(a) `"e e"` (b) `""` (c) `"skh"`
(d) An error. (e) None of (a)–(d)

(14) After the assignment `say = "I seek the Grail"`, what is returned by `say[:say.find(’k’)]` ?
(a) `"k"` (b) `"I see"` (c) `"I seek"`
(d) An error. (e) None of (a)–(d)

(15) After the assignment `say = "I seek the Grail"`, what is returned by `say < say.replace( ’eek’, ’ought’ )` ?
(a) `False` (b) `True` (c) An error.
(d) None of (a)–(c)

(16) Which of the Python programs below does *not* print the following table:



```
>>> ================================ RESTART ====
>>> 
    0    1    4
    9   16   25
   36   49   64
```

Note that this table contains the first 9 perfect squares, printed three to a line. In the last line, there are 3 space characters before the `36`, between the `36` and the `49`, and between the `49` and the `64`.

(a)

```
for i in range(3):
    for j in range(3):
        print( str( (3 * i + j)**2 ).rjust(5), \
               end="" )     # there are no spaces in ""
    print()
```

(b)

```
for i in range(3):
    print( '{:5d}{:5d}{:5d}'.format( (3*i)**2, (3*i+1)**2, (3*i+2)**2 ) )
```

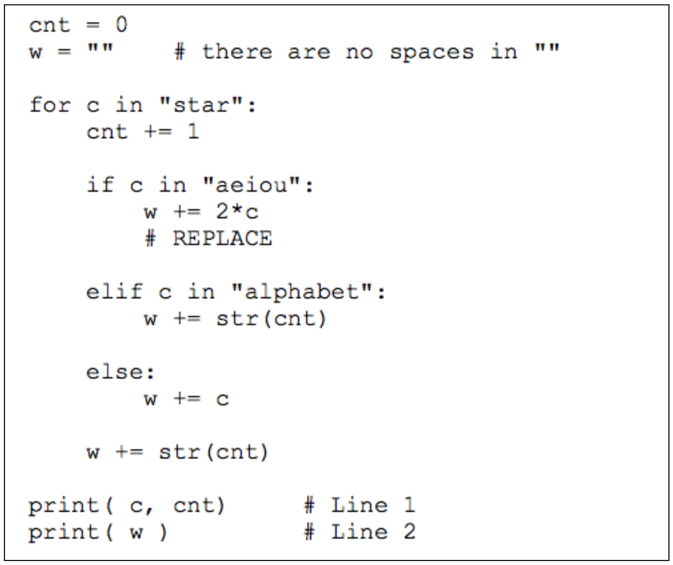
(c)

```
for i in range(9):

    if i % 3 == 0 and i != 0:
        print()

    print( '  {:>3d}'.format( i**2 ), \
           end="" ) # there are no spaces in ""
```

(d)

```
for i in range(3):
    for j in range(3):
        print( '{:5s}'.format( str( (3 * i + j)**2 ) ), \
               end="" ) # there are no spaces in ""
    print()
```

(e) None of the above (i.e., they all print the table in the format shown).



```
cnt = 0
w = ""    # there are no spaces in ""

for c in "star":
    cnt += 1

    if c in "aeiou":
        w += 2*c
        # REPLACE

    elif c in "alphabet":
        w += str(cnt)

    else:
        w += c

    w += str(cnt)

print( c, cnt)      # Line 1
print( w )          # Line 2
```

FIGURE 1

(17) In Figure 1, what is printed by `Line 1` (the line with the comment `# Line 1`)?

(a) `a 2` (b) `r 3` (c) `a 3`
(d) `r 4` (e) None of (a)–(d)

(18) In Figure 1, what is printed by `Line 2` (the line with the comment `# Line 2`)?

(a) `s122aa3r4` (b) `s122aa33r4` (c) `s122aar4`
(d) `s122aa` (e) None of (a)–(d)

(19) In Figure 1, assuming the comment `# REPLACE` is replaced with the statement `continue`, what is printed by `Line 2` (the line with the comment `# Line 2`)?

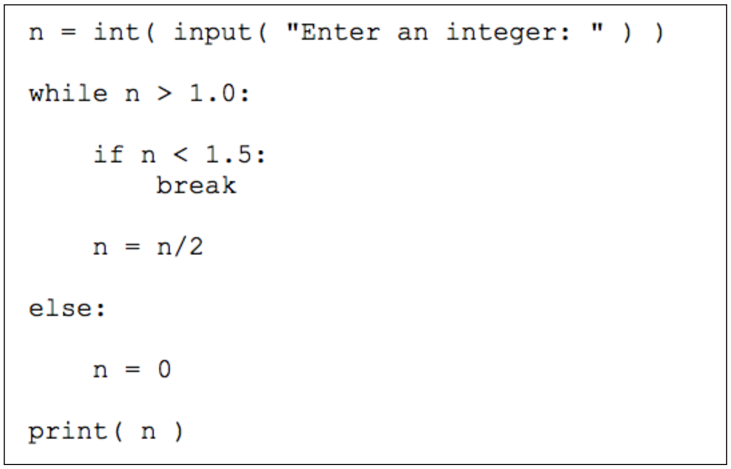
(a) `s122aa3r4` (b) `s122aa33r4` (c) `s122aar4`
(d) `s122aa` (e) None of (a)–(d)

(20) In Figure 1, assuming the comment `# REPLACE` is replaced with the statement `break`, what is printed by `Line 1` (the line with the comment `# Line 1`)?

(a) `a 2` (b) `r 3` (c) `a 3`
(d) `r 4` (e) None of (a)–(d)

(21) In Figure 1, assuming the comment `# REPLACE` is replaced with the statement `break`, then what is printed by `Line 2` (the line with the comment `# Line 2`)?

(a) `s122aa` (b) `s122aa33r4` (c) `s122aar4`
(d) `s122aa3r4` (e) None of (a)–(d)



```
n = int( input( "Enter an integer: " ) )

while n > 1.0:

    if n < 1.5:
        break

    n = n/2

else:

    n = 0

print( n )
```

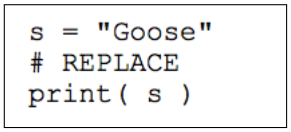
FIGURE 2

(22) Consider the Python code in Figure 2. What will be printed if the user enters `8` at the prompt (i.e., the user pushes the `8` key followed by the `Enter` key)?

(a) `1.0` (b) `0` (c) `1.125`
(d) `1.5` (e) None of (a)–(d)

(23) Consider the Python code in Figure 2. What will be printed if the user enters `9` at the prompt (i.e., the user pushes the `9` key followed by the `Enter` key)?

(a) `1.0` (b) `0` (c) `1.125`
(d) `1.5` (e) None of (a)–(d)



```
s = "Goose"
# REPLACE
print( s )
```

FIGURE 3

(24) Consider the Python code in Figure 3 and the three statements shown below that could replace the comment `# REPLACE`. Which replacement (statement) will cause the program to print `Geese` ?

(a) `s.replace( ’o’, ’e’ )` (b) `s[1:3] = "ee"`
(c) `s = s[0] + "ee" + s[3:]` (d) All of (a)–(c)
(e) None of (a)–(c)

(25) Assume `math.sqrt( 7 )` returns `2.6457513110645907`. What is returned by `int( math.sqrt( 7 ) )` ?

(a) `3` (b) `2` (c) An error.
(d) None of (a)–(c)

(26) Assume `math.sqrt( 7 )` returns `2.6457513110645907`. What is returned by `int( str( math.sqrt( 7 ) ) )` ?

(a) `2` (b) `3` (c) An error.
(d) None of (a)–(c)

(27) Assume `math.sqrt( 7 )` returns `2.6457513110645907`. What is returned by `round( math.sqrt( 7 ), 3 )` ?

(a) `2.64` (b) `2.645` (c) `2.65`
(d) `2.646` (e) None of (a)–(d).

(28) Assume `math.sqrt( 7 )` returns `2.6457513110645907`. What is returned by `int( math.sqrt( 7 ) * 1000 ) / 1000` ?

(a) `2.646` (b) `2.65` (c) `2.645`
(d) `2.64` (e) None of (a)–(d).

(29) Given that a file has been successfully opened with

```
file = open("myFile.txt", "w")
```

which statement writes the string `"Good night, Moon."` as the first line to the file named `myFile.txt`?

(a) `"myFile.txt".write( "Good night, Moon." )`
(b) `print( "Good night, Moon.", file="myFile.txt" )`
(c) `file.write( "Good night, Moon.\n" )`
(d) All of (a)–(c)
(e) None of (a)–(c)

(30) Given that a file has been successfully opened with

```
file = open("myFile.txt", "r")
```

which statement writes the string `"Good night, Moon."` as the first line to the file named `myFile.txt`?

(a) `"myFile.txt".write( "Good night, Moon." )`
(b) `print( "Good night, Moon.", file="myFile.txt" )`
(c) `file.write( "Good night, Moon.\n" )`
(d) All of (a)–(c)
(e) None of (a)–(c)

Scratch