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 (005, 006, 007, 008, 009, or 010)
- Exam form (2 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.

Form A

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

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

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

```
odds = [1, 3, 5, 7, 9, 11, 13, 15, 17, 19]

print( odds[1:5] )              # Line 1

print( odds[1::3] )             # Line 2

print( odds.index( 11 ) )       # Line 3

print( sum( odds[:5] ) )        # Line 4

for i in range( 1, len(odds)-1 ):
    odds[i] = odds[i-1] + odds[i+1]

print( odds[0], odds[3] )       # Line 5
```

FIGURE 1

(1) In Fig. 1, what is printed by the line labeled `Line 1`?

(a) `[1, 3, 5]` (b) `[3, 5, 7, 9]` (c) `[1, 3]`
(d) `[3, 5, 7, 9, 11]` (e) None of (a)–(d)

(2) In Fig. 1, what is printed by the line labeled `Line 2`?

(a) `[3, 9, 15]` (b) `[1, 3]` (c) `[ 1 ]`
(d) `[1, 7, 13, 19]` (e) None of (a)–(d)

(3) In Fig. 1, what is printed by the line labeled `Line 3`?

(a) `5` (b) `[1, 3, 5, 7, 9]` (c) `6`
(d) An error (e) None of (a)–(d)

(4) In Fig. 1, what is printed by the line labeled `Line 4`?

(a) `9` (b) `4` (c) `25`
(d) An error (e) None of (a)–(d)

(5) In Fig. 1, what is printed by the line labeled `Line 5`?

(a) `4 22` (b) `1 22` (c) `1 14`
(d) `4 14` (e) None of (a)–(d)

(6) After executing `T = (3, 2)`, which of the following is not allowed?

(a) `T.count( 3 )` (b) `T.sort()` (c) `6 in T`
(d) `len( T )` (e) None of (a)–(d)

(7) What is printed by the following program?

```
nums = list()
for n in range( 4 ):
    nums.insert( 0, n**2 )

print( nums )
```

(a) `[0, 1, 4, 9]` (b) `[1, 4, 9, 25]` (c) `[9, 4, 1, 0]`
(d) `[25, 9, 4, 1]` (e) None of (a)–(d)

```
def foo( a, b=3, c=False ):
    if c:
        return sum( [a, b, c] )
    else:
        return a * b


# Replace this line
```

FIGURE 2

(8) What is printed if the comment in Fig. 2 is replaced with the instruction `print( foo() )`?

(a) `0` (b) `6` (c) `9`
(d) `xx` (e) None of (a)–(d)

(9) What is printed if the comment in Fig. 2 is replaced with the instruction `print( foo( 2 ) )`?

(a) `0` (b) `6` (c) `9`
(d) `xx` (e) None of (a)–(d)

(10) What is printed if the comment in Fig. 2 is replaced with the instruction `print( foo( 1, c=5 ) )`?

(a) `0` (b) `6` (c) `9`
(d) `xx` (e) None of (a)–(d)

(11) What is printed if the comment in Fig. 2 is replaced with the instruction `print( foo ( 2, 'x', 0 ) )`?

(a) `0` (b) `6` (c) `9`
(d) `xx` (e) None of (a)–(d)

```
def f(x, y):
    while y:
        x.append ( y[-1] )
        y = y[:-1]

    return sum( x )

L1 = [1, 2, 3]
L2 = [4, 5]
print( f( L1, L2 ) )      # Line 1
print( L1 )               # Line 2
print( L2 )               # Line 3
```

FIGURE 3

(12) In Fig. 3, what is printed by the line labeled `Line 1`?

(a) `9` (b) `15` (c) `6`
(d) `0` (e) None of (a)–(d)

(13) In Fig. 3, what is printed by the line labeled `Line 2`?

(a) `[4, 5]` (b) `[1, 2, 3]` (c) `[1, 2, 3, 5, 4]`
(d) `[]` (e) None of (a)–(d)

(14) In Fig. 3, what is printed by the line labeled `Line 3`?

(a) `[4, 5]` (b) `[1, 2, 3]` (c) `[1, 2, 3, 5, 4]`
(d) `[]` (e) None of (a)–(d)

```
a_str = "1. Ready.  2. Set.  3. Go!"
a_lst = a_str.split()
b_lst = [s for s in a_lst if not s[:-1].isdigit()]

print( len( a_lst ), len( b_lst ) )       # Line 1

print( "".join( b_lst ) )                 # Line 2
```

FIGURE 4

(15) In Fig. 4, what is printed by the line labeled `Line 1`?

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

(16) In Fig. 4, what is printed by the line labeled `Line 2`?

(a) `ReadySetGo` (b) `Ready.Set.Go!` (c) `1.2.3.`
(d) `1.Ready.2.Set.3.Go!` (e) None of (a)–(d)

```
def f(x, y):
    try:
        if x > 0:
            r = y + a
        else:
            r = x + y

    except TypeError:
        r = 0

    except NameError:
        r = 1

    return r

def main():
    a = 5
    print( f( a, 3 ) )        # Line 1
    print( f( 'x', 'y' ) )    # Line 2

main()
```

FIGURE 5

(17) Which statement about the program Fig. 5 is *not* correct?

(a) `x` is a parameter of `f`
(b) `x` is a local variable of `f`
(c) `r` is a local variable of `f`
(d) `'x'` is an argument in an invocation of `f`
(e) None of (a)–(d) is incorrect.

(18) In Fig. 5, what is printed by the line labeled `Line 1`?

(a) `1`
(b) `0`
(c) `8`
(d) `xy`
(e) None of (a)–(d)

(19) In Fig. 5, what is printed by the line labeled `Line 2`?

(a) `1`
(b) `0`
(c) `8`
(d) `xy`
(e) None of (a)–(d)

(20) After the assignment, `D = dict{}`, which of the following causes an exception?

(a) `sum( D.values() )`
(b) `D[0, 0] = 1`
(c) `D[(0, 0)] = 1`
(d) `D[[0, 0]] = 1`
(e) None of (a)–(d) causes an exception

(21) After the assignment, `L = list()`, which of the following causes an exception?

(a) `L[0] = 1`
(b) `sum( L )`
(c) `L += [1]`
(d) `L.append( [1,2] )`
(e) None of (a)–(d) causes an exception

```
w = list( 'Hi, ho! Hi, ho!' )

d = dict()
for i in range( len( w ) ):
    k = w[i].lower()

    if not k.isalpha():
        continue

    if k in d:
        d[k] = d[k] + i
    else:
        d[k] = i

print( len( w ), len( d ) )                    # Line 1

print( '!' in w, '!' in d )                    # Line 2

print( 'o' in d.items(), 'o' in d.values() )  # Line 3

print( min( d.keys() ) )                       # Line 4

print( d['i'] )                                # Line 5
```

FIGURE 6

(22) In Fig. 6, what is printed by the line labeled `Line 1`?

(a) `15 5` (b) `4 3` (c) `15 3`
(d) `4 6` (e) None of (a)–(d)

(23) In Fig. 6, what is printed by the line labeled `Line 2`?

(a) `True True` (b) `False True` (c) `True False`
(d) `False False` (e) None of (a)–(d)

(24) In Fig. 6, what is printed by the line labeled `Line 3`?

(a) `True True` (b) `False True` (c) `True False`
(d) `False False` (e) None of (a)–(d)

(25) In Fig. 6, what is printed by the line labeled `Line 4`?

(a) `'hi'` (b) `10` (c) `h`
(d) `0` (e) None of (a)–(d)

(26) In Fig. 6, what is printed by the line labeled `Line 5`?

(a) `2` (b) An error (c) `0`
(d) `10` (e) None of (a)–(d)

```
l = [ ('alpha', 1), ('beta', 5), ('gamma', 1), ('alpha', 6), \
      ('beta', 9), ('beta', 3), ('alpha', 3)]

d = {}
for t in l:
    k = t[0]
    if k not in d:
        d[k] = list()
    d[k].append( t[1] )

print( len(l), len(d) )             # Line 1

print( d['alpha'] )                 # Line 2
s = [str(n) for n in d['alpha']]
print( s.sort() )                   # Line 3

print( ', '.join( s ) )             # Line 4
```

FIGURE 7

(27) In Fig. 7, what is printed by the line labeled `Line 1`?

(a) `14 3` (b) `7 3` (c) `14 14`
(d) `7 14` (e) None of (a)–(d)

(28) In Fig. 7, what is printed by the line labeled `Line 2`?

(a) `[1, 3, 6]` (b) `[1, 6, 3]` (c) `[]`
(d) `None` (e) None of (a)–(d)

(29) In Fig. 7, what is printed by the line labeled `Line 3`?

(a) `[1, 6, 3]` (b) `[1, 3, 6]` (c) `None`
(d) `[]` (e) None of (a)–(d)

(30) In Fig. 7, what is printed by the line labeled `Line 4`?

(a) `None` (b) `1, 3, 6,` (c) a blank line
(d) `1, 3, 6` (e) None of (a)–(d)

Scratch