CPSC 231 Midterm Review: Winter 2006

Part I: Multiple choice (select the best answer to each question)

1. What is the programming language that is used for the program writing assignments in this class?
   a. Pascal
   b. C++
   c. Visual Basic
   d. Java
   e. What??? We're actually supposed to write programs for this class!!!

Answer: a

2. Which of the following UNIX commands could you use to view the contents of a directory?
   a. cd
   b. ls
   c. rm
   d. (a) & (c)
   e. None of the above

Answer: b

3. Which area of Computer Science focuses primarily on representing information in a way that makes the information easier to find and use?
   a. Graphics
   b. Artificial Intelligence
   c. Data bases
   d. Information Visualization
   e. Human-Computer Interaction

Answer: d

4. Which of the following is a correct ranking the following from smallest to largest units of storage (for the word size use a modern desktop computer)?
   a. Byte, bit, word
   b. Bit, byte, word
   c. Word, bit, byte
   d. Word, byte, bit
   e. None of the above

Answer: b

5. What does the 'R' refer to for CD-R drives??
   a. You have permission to **r**ead information from the CD
   b. You can **r**ecord information onto the CD
   c. You can **r**ewrite to CD (record and erase information multiple times)
   d. This CD is a next generation **r**apid-format CD
   e. None of the above are true

Answer: b

6. What is the binary equivalent of the octal number 36?
   a. 8
   b. 30
   c. 36
   d. 11110
   e. None of the above

Answer: d

7. What is the base ten equivalent of the decimal number 27?
   a. 10
   b. 1B
   c. 27
   d. 33
   e. 11011

Answer: C

8. What is the decimal result of performing the subtraction (via the ones complement approach) of the decimal numbers -1-3 using a computer with a 3 bit word size?
   a. +3
   b. -3
   c. +4
   d. -4
   e. -7

Answer: a

9. What will be the output of the following program? (<SP> is used to show a space)

```
program intro (output);
begin
  write('hel':3);
  writeln('@':3);
end.
```

   a. hel@
   b. 'hel':3'@':3
   c. hel<SP><SP>@
   d. <SP><SP>hel@
   e. hel@<SP><SP>

Answer: c

10. What will be the output of the following program?

```
program decision (output);
begin
  var num : integer;
  num := 27;
  if (num > 1) then
    write('a')
  else if (num > 10) then
    write('b')
  else if (num > 100) then
    write('c');
end.
```

   a. a
   b. b
   c. ab
   d. abc
   e. None of the above

Answer: a

11. How many times will the loop in the following program execute?

```
program loop (output);
begin
  var i : integer;
  i := 10;
  while (i < 4) do
  begin
    write(i);
    i := i + 1;
  end;
end.
```

a. 1
b. 9
c. 10
d. The loop will never execute
e. None of the above

Answer: d

12. Which of the following while-do loops is the *most* similar in logic to the for-loop shown below?

```
for i := 1 to 4 do
  write(i, ' ');
```

a.
```
i := 1;
while (i < 4) do
begin
  write(i, ' ');
  i := i + 1;
end;
```

b.
```
i := 1;
while NOT (i < 4) do
begin
  write(i, ' ');
  i := i + 1;
end;
```

c.
```
i := 4;
while (i >= 1) do
begin
  write(i, ' ');
  i := i - 1;
end;
```

d.
```
i := 1;
while (i <= 4) do
begin
  i := i + 1;
  write(i, ' ');
end;
```

e.
```
i := 1;
while (i <= 4) do
begin
  write(i, ' ');
  i := i + 1;
end;
```

Part II: Short answer

Question 1: In the space provided below trace the output of the following program.

```
program practiceFun (output);

var
  var1 : integer;
  var2 : integer;

procedure proc  (      var3 : integer;
                    var var4 : integer);
var
  var2 :  integer;
begin
  var2 := 10;
  var3 := 20;
  var4 := 30;
  writeln('3:', var2);
  writeln('4:', var3);
  writeln('5:', var4);
end;

function fun (var2 : integer):integer;
begin
  fun := var2 + 1;
end;

begin
  var var2 :  integer;

  var1  := 1;
  var2  := 2;
  writeln('1:', var1);
  writeln('2:', var2);
  proc(var1, var2);
  writeln('6:', var1);
  writeln('7:', var2);

  begin
    var var2 : integer;

    var2  := 0;
    var2  := fun(var2);
    writeln('8:', var1);
    writeln('9:', var2);
  end;

  writeln('10:', var1);
  writeln('11:', var2);
end.
```

<< **Write your answer here** >>

1:1
2:2
3:10
4:20
5:30
6:1
7:30
8:1
9:1
10:1
11:30

Question 2:

Write the code for procedure 'swap' that will take two integers as parameters, num1 and num2, and *swaps the contents of these memory locations* so the output of the writeln should be: 17 11

```
program moduleCoding (output);
```

<< Write your answer here >>

```
procedure swap (var num1 : integer;
                var num2 : integer);
var
  temp : integer;
begin
  temp := num1;
  num1 := num2;
  num2 := temp;
end;
```

<< End of answer space >>

```
begin
  var num1 : integer;
  var num2 : integer;

  num1 := 11;
  num2 := 17;
  swap(num1,num2);
  writeln(num1, ' ', num2);
end.
```

Question 3:
Suppose that when you compile and run the program below you get as output the following value: '-1073742780'. Explain why you get this value.

```
program oddProgram (output);
begin
  var num : integer;
  writeln(num);
end.
```

<< Write your answer here >>
The memory location 'num' was not initialized to any value prior to being used (in the call to procedure writeln). Consequently the value that is stored there cannot be relied upon (garbage is displayed onscreen).

JT: Liked the practice exam, then you'll love the real thing!