Honors Introduction to C Test #1 (9/21/2018)

Name: _____

1) (9 pts) What is the output of the following segment of code:

```
int a = 5, b, c;
b = 3*a + 1;
c = (2*a + b)%17;
a = (a + b + c)/3;
printf("a = %d, b = %d, c = %d\n", a, b, c);
```

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2) (10 pts) The most basic definition of decibels, typically used to measure sound, actually calculates a relationship between two different power levels. The formula is as follows:

$$dB = 10log_{10}(\frac{P2}{P1})$$

where P2 is the power of the source being measured and P1 is the baseline unit of power. Complete the program below so that it reads in values for P1 and P2, and outputs the relative decibel measure of P2 in terms of P1. Note: The library math.h has the following function available for use:

double log10(double x)

Returns the common logarithm (base-10 logarithm) of **x**.

```
#include <stdio.h>
#include <math.h>

int main(void) {

    double power1, power2;
    printf("Please enter the base level of power.\n");

    _____ ;
    printf("Please enter the power level of the source.\n");

    _____ ;

    double res = _____;

    printf("Your source is %lf decibels.\n", _____);
    return 0;
}
```

3) (10 pts) Three ounces of UCF Sweet Tea contain one teaspoon of sugar. A gallon is 128 ounces. Complete the program below so that it reads in the number of gallons of UCF Sweet Tea in a catering order and prints out the number of teaspoons of sugar in the order, rounded to two decimal places. You must use the constants given in the program below to receive full credit.

```
#include <stdio.h>
#define OZ_PER_GAL 128
#define OZ_PER_TSP_SUGAR 3
int main() {

    int num_gallons;
    printf("How many gallons of tea for the order?\n");
    scanf("%d", &num_gallons);









     return 0;
}
```

4) (10 pts) What is the output of the following program?

```
#include <stdio.h>
int main(void) {
    int a = 2, b = 3, i;
    for (i=0; i<5; i++) {
        b = b + a;
        a = 2*b - 3*a;
        printf("%d %d\n", a, b);
        if (b - a > 6)
            continue;
        a += 4;
    }
    return 0;
}
```

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5) (15 pts) Regular playing cards have the following kinds: Ace, 2, 3, 4, 5, 6, 7, 8, 9, 10, Jack, Queen and King. We can assign the following numbers to the kinds that aren't already numbers: Ace = 1, Jack = 11, Queen = 12 and King = 13. In a simplified version of the game of blackjack, an Ace has the value of 11 points, all of the numeric cards are worth their numeric value in points, and the Jack, Queen and King are have a value of 10 points. Complete the program below so that it reads in the numeric ***code*** of a card (an integer in between 1 and 13, inclusive) and prints out the ***value*** of that card in blackjack (in between 2 and 11, inclusive).

```
#include <stdio.h>

int main(void) {

    int kind, value;
    printf("Enter the card for which you want the value.\n");
    scanf("%d", & kind);









    printf("The value of your card is %d.\n", value);
    return 0;
}
```

6) (20 pts) We define an ascending number to be one which has its digits strictly in order. For example, 2478 and 189 are ascending numbers, but 2338 and 3781 are not. Complete the program below so that it reads in a positive integer n, determines if it's an ascending number or not and prints out the result.

```
#include <stdio.h>

int main(void) {

    int n;
    printf("Please enter n.\n");
    scanf("%d", &n);
    int saven = n;
    int is_ascending = 1, prev = 10;









    if (is_ascending)
        printf("%d is an ascending number.\n", n);
    else
        printf("%d is NOT an ascending number.\n", n);

    return 0;
}
```

7) (25 pts) Consider the problem of printing an Ascii art version of the letter V of n rows, where n is a positive integer 3 or greater. The example below shows the design for n = 4. The top row starts and ends with a star, with spaces in between, each subsequent row has its left start one space to the right and its right start one space to the left compared to the previous row, until the last row where there is one star. Complete the program below so that it asks the user for the number of rows for the Ascii art V and prints it out.

```
*     *
 *   *
  * *
   *
#include <stdio.h>
int main(void) {

    int n;
    printf("Enter the number of rows for your v.\n");
    scanf("%d", &n);
    int i, mid, edge;









    return 0;
}
```

8) (1 pts) How many times a year does an annual review occur? _____

Scratch Page – Please clearly mark any work on this page you would like graded.