EXAM 1 – WRITTEN PORTION

NAME _____

SECTION NUMBER _____

CAMPUS MAILBOX NUMBER _____

EMAIL ADDRESS _____@rose-hulman.edu

Written Portion	/ 48
Computer Portion	/ 52
Total	/ 100

USE MATLAB SYNTAX FOR ALL PROGRAMS AND COMMANDS YOU WRITE

Problem 1: (4 points) What is `Fred` after this code executes?

```
clc
clear variables
Fred=[1 2; 3 4; 5 6; 7 8];
[m,n]=size(Fred);
for i=1:m
    Fred(i,1)=Fred(i,1)+2;
end
```

Problem 2: (4 points) We wish to copy the third column of `earth_move` into a new vector. Complete the code below.

```
clc
clear variables
earth_move=xlsread('earthquake_data');
[m,n]=size(earth_move);
for i=1:m
    up_down(_____________)=earth_move(_____________);
end
```

Problem 3: (4 points) What prints when we run the following code?

```
clc
clear variables
cats=10;
dogs=1;
fish=3;
if (cats < dogs)
    fprintf('dog lover \n');
elseif (dogs < cats)
    fprintf('cat lover \n');
elseif (cats > 2)
    fprintf('crazy cat person \n');
elseif ((fish > 0) && (cats > 5))
    fprintf('The fish will not last long \n');
else
    fprintf('I do not know what to say \n');
end
```

a. The program crashes so nothing prints
b. The program runs, but nothing prints.
c. `dog lover`
d. `cat lover`
e. `crazy cat person`
f. `The fish will not last long`
g. `I do not know what to say`
h. All of the messages in d, e, f, and g will print
i. Other (explain)_____

Problem 4: (4 points) Which is the value of `a` after this code runs?

```
clc
clear variables
a=10;
b=5;
c=a*b;
d=b+a;
c=c+d;
a=c;
```

a. The program crashes
b. `a` is undefined
c. `10`
d. `65`
e. Other (explain)_____

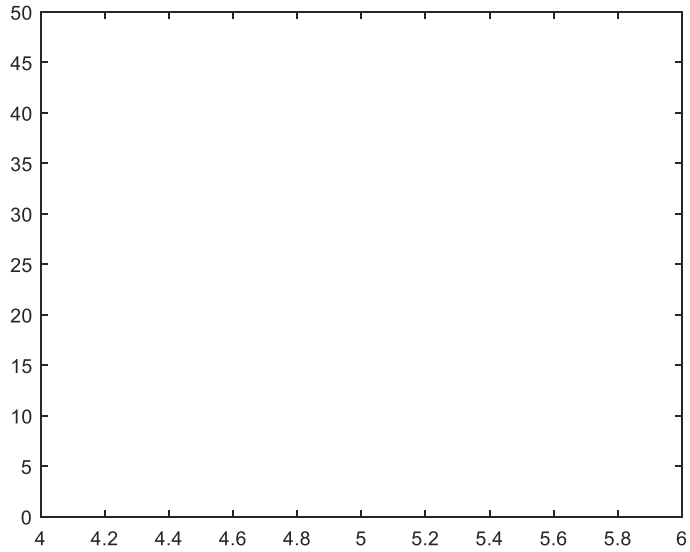
Problem 5: (4 points) How many times do the words `in the loop` print when we run this code?

```
clc
clear variables
i=4;
while i > 2
    fprintf('in the loop\n');
    i=i-1;
end
```

a. The program crashes so nothing prints.
b. The program runs fine but nothing prints.
c. Once
d. Twice
e. Three times.
f. Four times.
g. Other (explain)_____

Problem 6: (4 points) The following code runs and does not give any errors, but it produces an empty plot. Fix the code so that it correctly produces a line on the plot. (Do not worry about the axis labels or titles.)

```
clc

clear variables

close all

i=0;

for t=0:5

    i=i+1;

    x(i)=2*t^2;

    t_vec(i)=t;

end

plot(t,x)
```



Problem 7: (4 points) What is `vec` after this code finishes running?

```
clc
clear variables
for i=1:4
    vec(i)=i^2;
end
```

Problem 8: (4 points) What is `M` after this code finishes running?

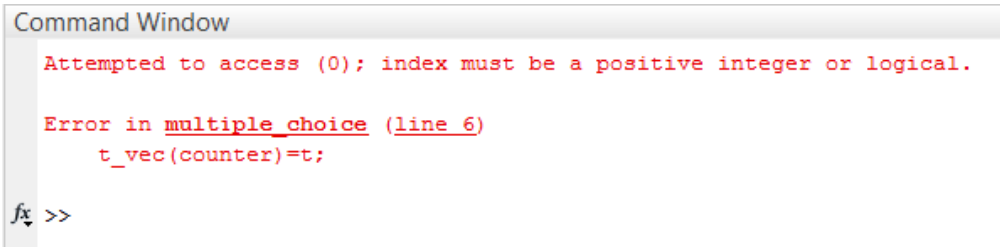
```
clc
clear variables
for i=1:2
    for j=1:4
        M(i,j)=i*j;
    end
end
```

Problem 9: (4 points) What is `daniel` after this code finishes running?

```
clc
clear variables
daniel(1)=1;
for i=2:3
    daniel(i)=daniel(i-1)*2;
end
```

Problem 10: (4 points) The following code is supposed to create a time vector, but it gives the error shown. Fix the code to eliminate the error.

```
clc

clear variables

counter=0;

deltat=0.001;

for t=0:deltat:1

    t_vec(counter)=t;

    counter=counter+1;

end
```



Problem 11: (8 points) Write a short program to create a matrix named `my_matrix`. In the first row of the matrix put an angle that goes from 0 to 360 degrees in steps of 10 degrees. In the second row, put the cosine of the angle; in the third row, the sine of the angle; and in the fourth row, the tangent (tand) of the angle.