

EXAM 1 – WRITTEN PORTION

NAME _____

SECTION NUMBER _____

CAMPUS MAILBOX NUMBER _____

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Multiple Choice	/ 50
Coding Problem	/ 50
Total	/ 100

USE MATLAB SYNTAX FOR ALL PROGRAMS AND COMMANDS YOU WRITE

Problem 1:

(4 points) Circle all of the file names that would be appropriate to use in Matlab. Appropriate file names will run and not result in errors.

- a. test case.m
- b. my_exam_code.m
- c. 1st_ME123_exam.m
- d. Day2-example1.m
- e. problem2.3.m
- f. Plot_Figure_12.m

Problem 2:

(4 points) Write the Matlab code for the following mathematical expression. Use the Matlab command for π , not 3.14159.

$$y = \sqrt{2\pi} e^{3x}$$

Problem 3:

(4 points) Given the following lines of code, where will the text be printed?

```
value=fopen('answer.txt','wt');  
fprintf(value, 'Hi. I am testing my code here. \n');  
fclose(value);
```

- a. To the command window only
- b. To a text file only
- c. To both a text file and the command window
- d. Nothing will print, because it will crash

Problem 4:

(4 points) What is the value of d after the following program executes?

```
a=3;
b=2;
c=a*b;
a=4;
d=c*a;
```

- a. d=12
- b. d=24
- c. d=32
- d. other: d=_____
- e. the program crashes

Problem 5:

(4 points) You are given a matrix called A

$$A = \begin{bmatrix} 1 & 2 & 5 \\ 3 & 8 & 9 \end{bmatrix}.$$

What is the value of A(3,1)?

- a. 1
- b. 2
- c. 5
- d. 3
- e. 8
- f. 9
- g. Other, explain: _____

Problem 6:

(4 points) You are given a matrix called B

$$B = \begin{bmatrix} 1 & 3 & 5 & 7 & 9 \\ 1 & 9 & 25 & 49 & 81 \end{bmatrix}$$

and a code segment

```
for i = 1:2
    B_sub(i,1) = B(2,i);
end
```

What is B_sub after the code is executed?

a. $B_sub = [1 \ 3]$

b. $B_sub = \begin{bmatrix} 1 \\ 3 \end{bmatrix}$

c. $B_sub = [1 \ 9]$

d. $B_sub = \begin{bmatrix} 1 \\ 9 \end{bmatrix}$

e. $B_sub = [3 \ 9]$

f. Other: _____

Problem 7:

(4 points) What is the value of i after the following program executes?

```
i = 1;  
for j = 1:1:3  
    i = j * j;  
end
```

- a. i=1
- b. i=4
- c. i=9
- d. i=14
- e. other: Explain _____
- f. the program crashes

Problem 8:

(4 points) What is the value of x after executing the following code segment:

```
x = 10;  
for n = 3:-1:1  
    x = x + n;  
end
```

- a. x = 4
- b. x = 7
- c. x = 10
- d. x = 13
- e. x = 16
- f. Other: _____

Problem 9:

(8 points) Write a short program to compute the sum of the positive integers that are divisible by 3 and less than 1000. Put the result in a variable called S. You do not need to print out the answer-- just write the lines required to make the computation.

Problem 10:

(10 points) Write a short program using a for loop to generate the following matrix B with 3 rows and 5 columns. The first row contains the odd numbers from 1 to 9, inclusive. The second row contains the square of the individual entries of the first row. The third row contains the cube of the individual entries of the first row.

$$B = \begin{bmatrix} 1 & 3 & 5 & 7 & 9 \\ 1 & 9 & 25 & 49 & 81 \\ 1 & 27 & 125 & 343 & 729 \end{bmatrix}$$