CS101: Program Language & Problem Solving
Sample Exam for First Exam
Note that 'a'=97, 'A'=65, and '0'=48.

Part I. True or False. Circle one. (20 Points – 2 Each)

1. T or F: The command ‘clc’ removes all the variables from the Workspace.
2. T or F: The expression ‘a’+1 returns ‘b’.
3. T or F: If a=[1, 2, 3]’ then the expression [a’; a’] cannot be used.
4. T or F: If a=[1, 2, 3]’ then a’*a returns a scalar.
5. T or F: If a=[1, 2, 3] and b=[3; 2; 1] then b+a can be used.
6. T or F: Use ['abc'; 'ef'; 'xyz'] can create a new string matrix.
7. T or F: 3i is the same as i3.
8. T or F: If A and B are two matrices with different dimensions then size(length(A)) is equal to size(length(B)).

Part II. Multiple Choices. Circle one answer. (20 Points – 2 Each)

9. If A=[5, 9, 3, 7]’, then size(A) returns:
   a. 2 2       c. 1 4
   b. 4 1       d. None of the above.

10. If A is a 4x4 matrix, then A*A^ (-1) returns:
    a. 1       c. eye(4)
    b. eye(4, 1) d. eye(1, 4).

11. If the command window is under ‘format short e’, then value 12.345678 will be displayed as:
    a. 12.35       c. 1.2346e+001
    b. 12. 3457    d. 12.3457e+000.

12. In command window, the meta-character which can be used as a command separator is:
    a. ‘’       c. ‘|’
    b. ‘:’       d. ‘,’

13. If str=['hello'; 'kitty'], then size(str) returns:
    a. 10 1       c. 1 10
    b. 2 5       d. 5 2.

14. If A=[10:-2:1], then A(4) returns:
    a. 8       c. 4
    b. 6       d. None of the above.
15. \( ('abc' - 'a') \) returns:
   a. 0 1 2
c. -1 0 1
b. 1 0 1
d. None of the above.

16. If \( A=[2, 4; 3, 5; 1, 6] \), then \( \text{size}(A(:)) \) returns:
   a. 1 6
c. 2 3
b. 6 1
d. 3 2.


17. \( A(:) = \) ________________________________.

18. \( A(:, \text{end}) = \) ________________________________.

19. \( \text{length}(A(:)) = \) ________________________________.

20. If we set \( A(:, 3) = [ ] \), then \( A = \) ________________________________.

21. If \( A(:) = 12: -1: 1 \), then \( A = \) ________________________________.

Part IV. Short Answers. (6 Points – 3 Each)

22. If \( a = [1:5] \), then \( a(2) = [ ] \) returns ________________________________.

23. If \( a = [4, 2, -3] \), then \( a' = \) ________________________________.

Part IV. Short answers. (12 Points)

24. (6 Points – 3 Each) According to the precedence of the operators, use parentheses to isolate them in their operating orders. For example: \( 2-5^3*4 \) will be presented as \( (2-((5^3)*4)) \).

   a) \( 2*4^3+4*7^2*4^3-3*2^2: \) ________________________________.
   
   b) \( 4*3^2+5^4*2^6*2: \) ________________________________.
Part V. Short Answers. (24 Points)

25. **(3 Points)** If \( a='\text{value}\ b=' \) and \( b=123 \), then write a statement that makes a new string as ‘value b=123’.

Specify the MATLAB statement: _____________________________________________________.

26. **(3 Points)** If \( x=3.1415927 \) then the MATLAB statement of 

\[
\text{fprintf(''var x = \%010.4f\n'\', x)}
\]

returns: ________________________________________.

Part VI. Short Answers. (11 Points)

27. **(7 Points)** How to create the given matrix by using functions \texttt{ones()}, \texttt{zeros()}, \texttt{eye()}\ and arithmetic operators only.

\[
\begin{bmatrix}
3 & 0 & 0 & 4 & 4 & 0 \\
0 & 3 & 0 & 4 & 4 & 0 \\
1 & 1 & 3 & 4 & 4 & 0 \\
1 & 1 & 2 & 2 & 2 & 2 \\
\end{bmatrix}
\]