

Student's Names	Student's IDs	Group No.

Question No.	I	II	Total
Mark			

**Instructions.**

1. Work on this assignment as groups of three.
2. Use any trusted source of information to handle this assignment with proper citation and no plagiarism.

[I]

(i) What is MATLAB?

(ii) Let  $B = \begin{bmatrix} 3 & -1 & 5 & 0 & 2 \\ 4 & -2 & 1 & 6 & -2 \\ 1 & 3 & -3 & 9 & 6 \\ 0 & 4 & 4 & -2 & 5 \\ -5 & 7 & 6 & 1 & -1 \end{bmatrix}$  and  $\mathbf{b} = \begin{bmatrix} 1 \\ 2 \\ 3 \\ 4 \\ 5 \end{bmatrix}$ .

- (a) Use MATLAB to create a random  $5 \times 5$  matrix and call it  $A$ .
- (b) Use MATLAB to compute  $\det(A)$ ,  $\det(B)$ ,  $tr(A)$ ,  $AB$ ,  $B^{-1}$  and the reduced row Echelon form of  $A$ .
- (c) Use MATLAB to solve the system  $B\mathbf{x} = \mathbf{b}$  by Gaussian Elimination.

OVER

**[II]** Read ONE of the following Sections: 10.9, 10.14 or 10.19 in *Elementary Linear Algebra with Applications* Book, the 11th Ed. Then, in no more than three A4 pages, answer **ONE** of the following questions:

- (a) How is Linear Algebra related to Computer Graphics?
- (b) How is Linear Algebra related to Cryptography?
- (c) How is Linear Algebra related to Warps and Morphs?

GOOD LUCK