First Semester 2019-2020   Mid – Term exam

Answer All questions   Time: 1 Hour   Math IV: 2nd Year Mechanical Eng.

(1) If $A = \begin{bmatrix} 2 & -1 & 0 \\ 1 & 3 & 1 \end{bmatrix}$. Show that $A`. A$ is symmetric matrix.

(2) Show that the matrix $A = \begin{bmatrix} 0 & 1+i \\ 1-i & 2 \end{bmatrix}$ is hermitian and find its eigenvalues.

(3) Write $P = 2z^2 + 4y^2 + 3x^2 + 2xy - 2yz$ in matrix form and find its type.

(4) If $A = \begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$. Find $f(A) = 2^A$.

Good Luck   *Dr. Mohamed Eid*