INJIBARA UNIVERSITY

COLLEGE OF NATURAL AND COMPUTATIONAL SCIENCE

DEPARTMENT OF MATHEMATICS

Applied Mathematics (Math 1011); Assignment Out of 10%

Target group: First Year IT and Computer science students.

Write all the necessary steps clearly and neatly for the given questions.

1. Find the volume of the parallelepiped with edges $\boldsymbol{u} = 6i - 3j + k$, $\boldsymbol{v} = 2i + j + 4k$, *and* $\boldsymbol{w} = 15i + 7j - k$.(**1 pt**)
2. Find the equation of the plane that passes through $P(1, 2, -1)$, $Q(3, 2, 4)$ and $R(0, 1, 4)$.(**1 pt**)
3. Let $AB = (-2, 0, -4)$. If the midpoint of the segment AB is $(2, 3, -2)$, then find the endpoints of AB.(**1 pt**)
4. Let A and B be given matrices: $A = \begin{bmatrix} 7 & 12 & -1 \\ 2 & 2 & 4 \\ 1 & 3 & -3 \end{bmatrix}$. Find. (**2.5 pt**)
   (a) All the minors of A
   (b) All the cofactors of A
   (c) The ad joint of A
   (d) The determinant of A
   (e) The inverse of A and its determinant.
5. Solve the following system of linear equations by Gaussian elimination method (**2 pt**)
   $2x_1 - 3x_2 + x_3 = 5$
   $4x_1 + 14x_2 + 12x_3 = 10$
   $6x_1 + x_2 + 5x_3 = 9$
6. Find the eigenvalues and corresponding eigenvectors of $A = \begin{bmatrix} 2 & -2 & -2 \\ -1 & 3 & 1 \\ 1 & -1 & 1 \end{bmatrix}$. (**2.5 pt**)