Assignment 2
Engineering Mathematics - I (MAT 1171)

Instructions: All students should write their **NAME - REGISTRATION NO - SECTION - ROLL NO** on the top of each sheet.

Let n and m be the digits in the unit's and ten's place respectively of your registration number.
For example: If your registration number is 220903**75** then $\mathbf{n = 5}$ and $\mathbf{m = 7}$.

1. Using Gram-Schmidt Orthogonalization process, find the orthonormal set of vectors from the set of vectors $B = \{(2, 1, 2), (1, 1, 1), (1, 5, 2)\}$. (3 Marks)

2. Check whether the set of vectors $B = \{(2, 1, n-3), (1, 1, -1), (1, 3, -2m)\}$ forms a basis of $\mathbb{R}^3$. If so, express $(2, 1, 3)$ as a linear combination of the elements of B. (3 Marks)

3. Solve $(D^3 - D)y = 3^x + 1 + 4\cos x + 2e^{(m+n+1)x}$. (4 Marks)