Nepal college of information technology

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| Level: Bachelor | Unit test | Year : 2013 |
| Programme: BE\_IT\_Morning/Day | | Full Marks: 70 |
| Course: Engineering Math III | | Pass Marks: 35 |
| Time : 2-hrs. |

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| *Candidates are required to give their answers in their own words as far as practicable.* |
| *The figures in the margin indicate full marks.* |
| Attempt all the questions. |

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|  | 1. Using the properties of determinant show that 2. Show that the given system of linear equations   is consistent, and solve it using Gauss elimination method. | 7  8 |
|  | 1. Define a linear transformation between any two vector spaces. Show that a transformation  defined by T(x, y) =( x + y, x - y) is a linear. Is a transformation such that T(x)= x + a linear? 2. Define Eigen values and Eigen vectors. Find Eigen values and Eigen vectors of the square matrix: | 8  7 |
|  | 1. State cayley - Hamilton theorem . Verify this theorem for Also find B-1. 2. Define an infinite series. Discuss the convergence and divergence of an infinite series. Show that if an infinite series is convergent, then but converse may not be true. | 8  7 |
|  | 1. What do you mean by limit comparison test for an infinite series? State and prove D 'Alembert's ratio test. 2. Discuss the convergence and divergence of the series     OR | 8  7 |
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|  | Test the convergence and divergence of any two of the following | 2×5 |