Pokhara University

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| Level: Bachelor | Semester – Fall | Year : 2012 |
| Programme: BE | | Full Marks: 100 |
| Course: Engineering Mathematics III | | Pass Marks: 45 |
| Time : 3hrs. |

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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. What is the condition for matrix to have its inverse? Find Adjoint of A if:   A =   1. State Cayley Hamilton Theorem and use it to find the inverse of   **OR**  When is a set of simultaneous equations said to be consistent? Show that the set of simultaneous equations is consistent and solve it using Gauss elimination method. | 8  7  7 |
|  | 1. Define eigen value and eigen vector. Find the eigen value and corresponding eigen vector of the matrix 2. Define linear dependence and independence of vectors. Examine for linear dependence [1, 0,2, 1], [3,1,2,1], [4,6,2,-4]. | 8  7 |
|  | 1. Test the convergence and find the interval and radius of convergence of the power series 2. Prove the necessary condition for the convergence of an infinite series un = 0 but this is not sufficient. | 8  7 |
|  | 1. State Green theorem. Evaluate , where C is the closed curve consisting of the graph of  and between the points (0, 0) and (2, 4).   **OR**  Show that the form under the integral sign is exact and then evaluate     1. Find the Fourier series of | 8  7 |
|  | 1. Find Fourier series of f(x) = x+|x| for -π <x<π. 2. If ø= log (x2+y2+z2) find div(grad ø) and curl(grad ø) | 5  10 |
|  | 1. State Stoke's theorem. Evaluate F.r'(s)ds where F = [2y], C the circle .   **OR**  Evaluate  S: x + y +z =1, x ≥ 0, y ≥ 0, z ≥0.   1. A particle moves on the curve     time | 8  7 |
|  | Attempt all the questions:   1. Test the series is absolutely convergent or not. 2. Show that the transformation T:R2 R2 defined by T(x,y) = (x,-2y) is linear. 3. Test the convergent and divergent of the series 4. Check the exactness and evaluate the integration | 2.5×4 |