Nepal college of information technology

Unit Test

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| Level: Bachelor | Semester – Fall | Year : 2014 |
| Programme: BE IT Day | | Full Marks : 60 |
|  | | Pass Marks: 30 |
| Course: Engineering Mathematics I | | Time : 2hrs. |

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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. | a) Examine the continuity and differentiability of the function f(x) at x=0 and x=  which is defined as follows:    b) If y = sin, show that  i)  ii)  OR  State and prove Cauchy Mean value theorem. If f(x) = sin x in , find the value of c prescribed by Rolle's theorem. | 8  7 |
| 2. | 1. A cylindrical tin can closed at both ends with given capacity has to be constructed. Show that the amount of tin required will be minimum when the height is equal to the diameter. 2. Define asymptotes. Find the asymptote of the curve:     3. State L-hospital's rule. Evaluate: | 8  7  5 |
| 3. | Integrate **any three** of the following:  i)  ii)  iii)  iv) | 3x5 |
| 4. | Attempt all the questions   1. Find the domain and range of the function y= 2 cos x. 2. Evaluate  log x dx. 3. State Leibnitz’s Theorem. 4. Find vertical and horizontal asymptotes of y(x-1) = (x2 -4). 5. Transform the equation  by transferring the origin to (-1,2) the coordinate axes remaining parallel. | 5x2 |