Nepal College of Information Technology

**Unit Test**

Fall 2012

Program : BE CE/IT Time : 2 hrs

Semester : (V) FM : 70

Subject : Numerical Methods PM : 35

* *Candidates are requested to give their answer as far as practicable in their own words.*
* *The figure in the margin indicates the full marks*
* ***Attempt ALL question***

1. a. Solve e-3x-sinx=0

by N-R method correct to four decimal place. 7

(b) Solve 10x+x-4=0 by secant method correct to 3 d.p. 8

2 (a) Solve by False position method. 7

(b) Fit a curve of the model y=ae to the following data 8

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Temperature (x) | 77 | 100 | 185 | 239 | 285 |
| Solubility (Y) | 2 | 3 | 7 | 11 | 20 |

3 (a) Fit the best fit curve of second degree polynomial by least square approximation method and determine the percentage of criminals under the age 20 years and 40 years. 8

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Under age | 15 | 25 | 45 | 55 | 65 | 75 |
| % of criminals | 6 | 25 | 18 | 14 | 10 | 4 |

(b) Estimate the missing figure from the following table 7

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 1 | 2 | 3 | 4 | 5 |
| f(x) | 2 | 5 | 7 | - | 32 |

4. a) Fit a Newton's interpolating polynomial to the following data 8

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| x | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| f(x) | 1 | 8 | 27 | 64 | 125 | 216 | 343 | 512 |

and hence find f(7.5)

b) Solve x3-3x-3 = 0 by fixed point iteration method 7

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