**CE 318-** **Num. & Stat. Methods in CE**

**Quiz #1**

**Semester 181 (1st Sem. 2018-19)**

**Total marks = 5 Date: 8-10-2018**

Name:……………………………………………………………….. Student ID:……………………………

**Q.1.. Convert this Binary number, (11101001)2 , to Decimal number. [2]**

**11101001 = (1 × 2⁷) + (1 × 2⁶) + (1 × 2⁵) + (0 × 2⁴) + (1 × 2³) + (0 × 2²) + (0 × 2¹) + (1 × 2⁰) = 233**

**Q.2.. Consider finding the root of f(x) = x2 – 3, and start with the interval [1, 2] as lower and upper value. Use Bisection method. Show four iterations. [3]**



|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **old** | **old** | **old** | **old** | **Xm,**  | **f(x\_m)** | **new** | **new** |  |
| **Iteration** | **x\_l** | **x\_u** | **f(x\_l)** | **f(x\_u)** | **x\_r** | **f(x\_r)** | **x\_l** | **x\_u** | **E\_a %** |
| 0 | 1.000 | 2.000 | -2.000 | 1.000 | 1.500 | -0.750 | 1.500 | 2.000 |  |
| 1 | 1.500 | 2.000 | -0.750 | 1.000 | 1.750 | 0.063 | 1.500 | 1.750 | 14.286 |
| 2 | 1.500 | 1.750 | -0.750 | 0.063 | 1.625 | -0.359 | 1.625 | 1.750 | 7.692 |
| 3 | 1.625 | 1.750 | -0.359 | 0.063 | 1.688 | -0.152 | 1.688 | 1.750 | 3.704 |
| 4 | 1.688 | 1.750 | -0.152 | 0.063 | 1.719 | -0.046 | 1.719 | 1.750 | 1.818 |
| 5 | 1.719 | 1.750 | -0.046 | 0.063 | 1.734 | 0.008 | 1.719 | 1.734 | 0.901 |
| 6 | 1.719 | 1.734 | -0.046 | 0.008 | 1.727 | -0.019 | 1.727 | 1.734 | 0.452 |