BRAC University (Department of Computer Science and Engineering)

CSE 330 (Numerical Methods)

Quiz 04

Student ID: **Full Marks: 15**

Section:

Name: **Duration: 20 minutes**

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1. Consider the following **fixed point function**, $g(x) = \sqrt{2x + 3}$.
   For $x_* = -1, 3$ find if g(x) is a converging function or diverging function.
   {Hints: Find convergence rate, λ } [4 marks]
2. Consider the following **fixed point function**, $g(x) = (9x - 1)^3$. [4 marks]
   a) If g(x) leads to superlinear convergence , what is the value of x_*
   b) Starting from x_0=3.5, find the value of x_* after **2 iterations** up to 5 significant figures
3. **{Show 2 iterations (k=0,1,2)}** Use Newton's method to find root of $f(x) = x^3+2x-4$ by using starting point x_0=2. [5 marks]
4. State the two disadvantages of Newton's method. [2 marks]