City University

Faculty of Science & Engineering

Department of Computer Science and Engineering

Program: B.Sc. in CSE

Midterm Examination Semester: Summer 2018

Course Code: CSE 231 Course Title: Numerical Analysis

Total Marks: 30 Duration: 1 hour 30 Minutes

Answer any 3(three) questions ***3 X 10 =30***

1 (a) Find a root of the equation $x^2 - 4x - 2 = 0$ using fixed point iteration method start with initial value $x_0 = 1$ correct upto three decimal places. ***5***

(b) Expand $(a+b)^7$ using binomial theorem and find the coefficient of $a^5 b^2$ and $a^4 b^3$. ***5***

2 (a) Find a root of the equation $x^2 - 4x - 10 = 0$ using bisection method correct upto three decimal places. ***4***

(b) Use Regular Falsi method to find the root of the equation $3x - \cos x - 1 = 0$. ***4***

(c) Compare the bisection method and Regular Falsi method. Which one is better and why? ***2***

3 (a) Apply Newton – Raphson method to find the root of $x^3 - 6x + 4 = 0$ correct to three decimal places. ***4***

(b) Apply Secant Method to find the root of $4x + \sin x - 7 = 0$ correct up to three decimal places. ***4***

(c) What is the drawback of Newton – Raphson method of finding root? ***2***

4 (a) Suppose you have $A_{(100x10)}, B_{(10x23)}$ if you multiply A and B. What will be the rows and columns of the resultant(AB) matrix. ***1***

(b) Let A = $\begin{bmatrix} 10 & 20 & 30 \\ 1 & 2 & 3 \end{bmatrix}$. what is the Transpose matrix (A^T) of A. ***1***

(c) Let A = $\begin{bmatrix} 2 & 0 & 1 \\ 1 & 2 & 3 \end{bmatrix}$, B = $\begin{bmatrix} 1 & 0 \\ 3 & -2 \\ 2 & 4 \end{bmatrix}$ find multiplication of matrix A and B. ***4***

(d) Solve linear equations $x + 2y = 4$, $3x - 5y = 1$ using matrix inverse method. ***4***