National University of Computer and Emerging Sciences, Lahore Campus

Course Name:	Calculus and Analytical Geometry	Course Code:	MT 1003
Degree Program:	BCS, BDS, BSE	Semester:	Fall 2022
Exam Duration:	60 Minutes	Total Marks:	40
Paper Date:	27-09-2022	Weight	15
Section:	ALL	Page(s):	1
Exam Type:	Sessional-I		

Student : Name: _____ Roll No. _____ Section: BDS-1A

Instruction/Notes: Attempt all questions. Programmable calculators are not allowed.

Question 1[CLO-1] Solve the given inequality and show the solution set on real line.

$$\left|2-\frac{1}{5x}\right| \geq \frac{1}{3}.$$

Question 2[CLO-2] Write the equation and plot the graph of each of the following for the given function

$$f(x) = x^{1/3}$$

a) Shift the graph of $f(x)$ upward 2 units

b) Shift the graph of $f(x)$ to the left by 1 unit

c) Compress vertically by the factor of 3 units

d) Stretch horizontally by the factor of 2.5 units

e) Reflect $f(x)$ across the y-axis

Question 3[CLO-3] For the function, $h(x) = \frac{3x}{x+2}$,

use the limit to determine all asymptotes of $h(x)$.

Question 4[CLO-3] For what values of a and b

$$f(x) = \begin{cases} x+4, & x<1 \\ ax^2 + bx + 2, & 1 \leq x < 3 \\ 6x + a - b, & x \geq 3 \end{cases}$$

Is continuous at every x?

Department of Computer Science   Page 1 of