


National University of Computer and Emerging Sciences, Lahore Campus

	Course:	Diff. Eq.(Calculus-II)	Course Code:	MT-224
	Program:	BS(CS)	Semester:	Spring-19
	Duration:	One Hour	Total Marks:	30
	Paper Date:	26-02-19	Weight	12.5%
	Section:	All	Page(s):	01
	Exam:	Mid Term-1	Roll No:	
Instruction/Notes:	1. Attempt all questions. Exchange of calculators or programmable calculators are not allowed. 2. If you think something wrong or need to be modified, do it with the best of your understanding.			

Question No.1(a):[05][CLO-1]: Use **nth-Term Test** for divergence to verify the convergence/divergence of the following series:

$$\sum_{n=0}^{\infty} \frac{e^n}{e^n + n}$$

Question No.1(b):[05][CLO-1]: Find the **Taylor Series Expansion** of the following function at **a = 0**

$$f(x) = 7\cos(-x) .$$

Question No.2:[10][CLO-1]: For the series given below determine **Radius of convergence, Interval of absolute convergence & Interval of Convergence**. Also determine the value(s) of **x** for which the series converges conditionally?

$$\sum_{n=2}^{\infty} \frac{x^n}{n (\ln n)^2}$$

Question No.3:[10][CLO-1]: Use the **Direct Comparison Test** or **Limit Comparison Test** to determine the convergence/divergence of the series given below:

$$\sum_{n=1}^{\infty} \frac{3^{n-1} + 1}{3^n}$$

Good Luck