MATHEMATICS 201
FIRST SEMESTER, 1999-2000
QUIZ 1

Time: 55 Minutes.

Date: November 13, 1999.

Name:————————————-

ID Number:——————————

Section:———————————-

Circle Instructor's Name: Prof. H. Abu-Khuzam, Prof. A. Lyzzaik

GRADE:

PART 1.	/64
PART 2.	/36
Total:	/100

PART 1: Investigate for convergence or divergence the following series:

(1) $\sum_{n=1}^{\infty} (\frac{3n}{3n+1})^n$. (9 points)

(2) $\sum_{n=1}^{\infty} \frac{(\ln n)^2}{n^{3/2}}$. (9 points)

(3) $\sum_{n=2}^{\infty} \sin(1/\ln n)$. (9 points)

(4) $\sum_{n=1}^{\infty} \frac{(n+2)!}{3^n (n!)^2}$. (9 points)

(5) $\sum_{n=1}^{\infty} \frac{1}{[\ln^2(1/n)]^n}$. (9 points)

6. Given the power series $\sum_{n=2}^{\infty} \frac{(-1)^n n!}{1.4.7.\cdots(3n-2)} x^n$.

(a) Find the series radius and interval of convergence. (15 points)

(b) For what values of x the series (i) converges conditionally and (ii) absolutely. (4 points)

PART 2: Circle the correct answer in the following multiple-choice questions: (9 points for each question)

7. The sum of the series

$$\sum_{n=2}^{\infty}[\frac{1}{n-1}-\frac{1}{n+1}]$$

is

(a) 5/4.
(b) 3/2.
(c) 1.
(d) 7/4.
(e) None of the above.

8. The series whose nth term is $\frac{\cos n\pi}{n^{0.01}}$

(a) converges absolutely.
(b) converges conditionally.
(c) the series is not alternating.
(d) diverges.
(e) None of the above.

9. The best magnitude of the error involved in using the sum of the first four terms to approximate the sum of the entire series

$$\sum_{n=1}^{\infty} (-1)^{n+1} \frac{1}{n^2}$$

is less than

(a) 0.04.
(b) 0.03.
(c) 0.02.
(d) 0.01.
(e) None of the above.

10. Which of the following statements is **FALSE?:**

(a) If $\sum a_n$ and $\sum b_n$ are both convergent, then $\sum(a_n + b_n)$ is convergent.

(b) If $\sum a_n$ is convergent and $\sum b_n$ is divergent, then $\sum(a_n + b_n)$ is divergent.

(c) If $\sum a_n$ converges, then $\lim_{n\to\infty} a_n = 0$.

(d) If $\sum a_n$ and $\sum b_n$ are both divergent, then $\sum(a_n + b_n)$ is divergent.

(e) None of the above.