King Saud University
Department Of Mathematics
M-203
(Differential and Integral Calculus)
Badeel Exam
First Mid-Term Examination
(I-Semester 1440/1441)

Max. Marks: 25   Time: 90 Minutes

Note: All Questions Carry equal marks.

Q. No: 1 Determine whether or not the sequence $\left\{\left(1-\dfrac{3}{n}\right)^{n}\right\}_{n=1}^{\infty}$ converges, and if it converges find its limit.

Q. No: 2 Determine whether the following infinite series converges or diverges. If it converges, find its sum

$$\sum_{n=1}^{\infty}\left[\frac{3}{n(n+1)}+\frac{1}{2^{n}}\right]$$

Q. No: 3 Determine whether the series $\displaystyle\sum_{n=3}^{\infty}(-1)^{n}\frac{1}{n\ln(n)}$ is absolutely convergent, conditionally convergent, or divergent

Q. No: 4 Find the interval of convergence and radius of convergence of the power series $\displaystyle\sum_{n=1}^{\infty}(-3)^{n}\frac{x^{n}}{\sqrt{n+1}}$

Q, No: 5 Find the Taylor series for $f(x)=x\ln x$ at $x=1$. Write the nth term,