B.Sc 2nd Semester 2021

1. Answer the following 5X3=15

   a. Define alternating series. Test the following series $\sum_{n=1}^{\infty}\frac{(-1)^{n+1}}{n^p}$

   for convergence, absolute convergence and conditional convergence

   b. Examine the convergence for the following infinite series $\sum\frac{1.3.5.\cdots(2n-1)}{2.4.6.\cdots 2n}\frac{x^{2n}}{2n}$, x being non- negative

   c. State Cauchy's n^{th} root test. Test the convergence of the series

   $$\left(\frac{2^2}{1^2}-\frac{2}{1}\right)^{-1}+\left(\frac{3^3}{2^3}-\frac{3}{2}\right)^{-2}+\left(\frac{4^4}{3^4}-\frac{4}{3}\right)^{-3}+\cdots$$