

S. R. Fatepuria College

Beldanga, Murshidabad.

Mathematics (honours); course: MATH-H-EC-T-03

Course title: Real Analysis

Time: 40 mins

Marks: 10

Answer any two questions (2x5=10):-

- ① Prove that the sequence $\{x_n\}$ where $x_n = \left(1 + \frac{1}{n}\right)^n$ is monotonic increasing and bounded.
- ② If m is close to $\sqrt{2}$ then $\frac{4+3m}{2+2m}$ is closer one — prove the result.
State Archimedean property of real numbers. (4+1)
- ③ State and prove D'Alembert's ratio test for series of positive terms. (1+4).