

ASSIGNMENT - 2

COURSE: - B.Sc (Hons) Physics II year IV Semester
PAPER: - Numerical Methods.

Date / /

Page



Note: - 1) Make a PDF of assignment and submit it on my email - prshajain@gmail.com / or whatsapp on my mobile number (not on Physics group).

2) Name: _____, COURSE: _____,

COLLEGE ROLL NO. _____

3) Submit latest by April 21

Q1. Use Newton's forward difference interpolation to estimate the no. of people aged between 40 and 45 from the following data.

Age group	30-40	40-50	50-60	60-70	70-80
No. of people	32	41	53	38	29

Q2. Using Newton's backward difference interpolation estimate $y(4)$ for the data $(0, 1)$; $(1, 0)$; $(2, 1)$ and $(3, 10)$.

Q3. Establish the Relationship between the operators

a) $\nabla = -\frac{1}{2}\delta^2 + \delta\sqrt{1 + \frac{1}{4}\delta^2}$

b) $\delta = \nabla(1 - \nabla)^{-\frac{1}{2}}$

Q4. Solve the integral using Romberg integration for $h=1$

and $h=\frac{1}{2}$: $I = \int_0^2 \frac{dx}{1+x}$

Q5. Calculate the following integral using Gaussian Quadrature for $n=2$ and $n=3$.

a) $\int_0^2 e^t dt$

b) $\int_0^4 2^x dx$

c) $\int_{-1}^1 \frac{dx}{1+x^2}$

Q6. Approximate the integral using the trapezoid rule, Simpson rule where

$f(x) = [0.2 + 25x - 200x^2 + 675x^3 - 900x^4 + 400x^5]$

$\int_0^{0.8} f(x) dx$

PREETI JAIN

9868668244