

College of Natural and Applied Sciences
Crawford University, Igbesa, Nigeria
Rain Semester Examination 2020/2021 Session CSC 414
(Computational and Numerical Analysis)
Instruction Attempt Any four (3) Questions. 2 Hours

- (1) (a) Explain the process of the One-Point Iteration scheme.
(b) Use the One-Point Iteration scheme to solve for one of the roots of a quadratic equation of your choice.
- (2) (a) Present a detail explanation of how the Regula-Falsi scheme works
(b) Use the Regula-Falsi scheme to solve $x^2 + 5x + 4 = 0$ using the interval $[0.5, 0.8]$
(c) Write a comparison essay on the three iteration schemes, One-Point, Regula-Falsi and Newton-Raphson.
- (3) (a) Present the Lagrangian Polynomial for a table with x_n variables, where $n = 5$.
(b) Consider the table below:

TABLE 1

x	1	3	4	8	9
$f(x)$	0.4	9.6	16.8	65.6	82.8

Use the Lagrangian interpolation technique to show that $f(6) = 37.2$

- (4) (a) Explain why Newton Difference Schemes or Everette's formula will not be appropriate to for estimation in Table 1 above.
(b) The following table represents the population of a town over a period of half century:

TABLE 2

Years	1891	1901	1911	1921	1931
Population	52	86	98	101	128

Find the population estimate for

- (i) 1905
- (ii) 1929
- (5) (a) State the Everette formula
(b) In Table 2 above, estimate the population for 1910 and give the reason for your choice of technique.

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