

QUESTION ONE [30 Marks] Compulsory

a) (i) Determine the value of $f(-1)$ from the set of function values

x	-4	-2	0	2	4	6	8
F(x)	541	55	1	-53	-155	31	1225

Using Gregory - Newton forward difference formula **(8 Marks)**

(ii) Change 0.526_{10} to Octal form **(4 Marks)**


b) (i) State and briefly explain the major steps involved in solving a given problem using a computer **(8 Marks)** 54

(ii) List three basic properties of an algebraic equation. **(6 marks)**

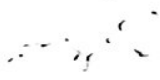
c) Change 1011.101_2 into denary system **(4 marks)**

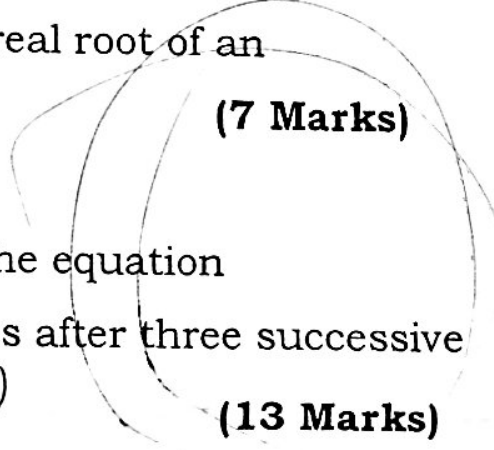
QUESTION TWO [20 Marks]

a) Explain the Newton - Raphson method to find a root of the equation $f(x) = 0$ and hence derive its iteration formula **(8 Marks)**

b) Find the real root of the equation $xe^x - 2 = 0$ correct to two decimal Places using Newton- Raphson method.  **(12 Marks)**

QUESTION THREE [20 Marks]

a) Obtain the Regula- falsi formula for finding the real root of an equation  **(7 Marks)**

b) Use Regula - falsi method to find a real root of the equation $\log x - \cos x = 0$, accurate to four decimal places after three successive approximations.  **(13 Marks)**

$$\text{Linear } y = f_0 + Df(P)$$