

APPENDIX - A

1. PROGRAM FOR NEWTON RAPHSON METHOD

```
SUBROUTINE NEWTON(L, XO, BETA, ZBETA)
DOUBLE PRECISION FXO, XO, BETA, DERIV, ALPHAX, F, FDER
IFLAG = 0
DO 20 N = 1, 1000
    FXO = F(L, XO, BETA)
    IF(DABS(FXO) .LT. 1.E-7) RETURN
    DERIV = FDER(L, XO)
    C TEMPORARY PRINT OUT
    WRITE(*,600) N, XO, FXO, DERIV
    600 FORMAT(I5, 5X, 18H XO, FXO, DERIV, 3E15.7)
    IF(DERIV .EQ. 0) GOTO 999
    ALPHAX = FXO/DERIV
    XO = XO - ALPHAX
    20 IF(DABS(ALPHAX) .LT. 1.E-7) RETURN
    999 IFLAG = 2
    RETURN
END
```

2. SUBROUTINE FOR GENERATION OF RANDOM NUMBERS

```
SUBROUTINE RANDOM(IX, IY, IZ, RAND)
IX = IX + 1
IY = IY + 1
IZ = IZ + 1
IX = 171 * MOD(IX, 177) - 2 * (IX/177)
IY = 172 * MOD(IY, 176) - 35 * (IY/176)
IZ = 170 * MOD(IZ, 178) - 63 * (IZ/178)
IF(IX.LT.0) IX = IX + 30269
IF(IY.LT.0) IY = IY + 30307
IF(IZ.LT.0) IZ = IZ + 30323
RAND = AMOD(FLOAT(IX)/30269.0 + FLOAT(IY)/30307.0 +
    ‡ FLOAT(IZ)/30323.0, 1.0)
RETURN
END
```