B.Sc. III Code-B-328 (Numerical Methods & Fundamental of computer)

Objective Questions. The Calculus of finite difference

Q.1 The method of obtaining the values of a function for any intermediate value of the argument for the give set of values of the function for certain values of argument is called

(a) Extrapolation (b) inter-relation
(c) interpolation (d) None of these

Q.2. $\Delta^{n-1} y_{k+1} - \Delta^{n-1} y_k =$

(a) $\Delta^n y_{k+1}$ (b) $\nabla^n y_{k+1}$
(c) $\Delta^2 y_k$ d none of these

Q.3. $\Delta(f(x) \cdot g(x)) =$

(a) $\Delta f(x) \cdot \Delta g(x)$ (b) $f(x) \Delta g(x) + g(x) \Delta f(x)$
(c) $f(x) \cdot g(x)$ (d) None of these

Q.4. The value of $f(x+h) - f(x) =$

(a) $\Delta f(x)$ (b) $\nabla f(x+h)$
c) both (a) and (b) d none of these

Q.5. the value of $E y_2 - E^{-1} y_2 =$

(a) Δ (b) ∇
(c) δ (d) none of these

Q.6. which of the following relation is correct?

(a) $\delta^2 = \Delta - \nabla$ (b) $\delta = E^{y_2} + E^{-y_2}$
(c) $\Delta E \nabla \equiv \Delta E$ (d) $\nabla \equiv 1 + E$

Q.7 Lagrange's interpolation formula can be used for:

(a) equal interval (b) unequal interval
(c) both (a) & (b) d. none of these

Q.8. The least degree of the interpolating polynomial which fits the following data ?

x	x_0	x_1	x_2	x_3	x_4
y	y_0	y_1	y_2	y_3	y_4

(a) a polynomial of degree 4 (b) a polynomial of degree 5
(b) a polynomial of degree 3 (d) a polynomial greater than degree 4.

Q.9 The value of $x^{(3)} =$

(a) $x \cdot x \cdot x$. (b) $x^2(x-1)$
(c) $x(x+1)(x-2)$ d none of these

Q.10 If $f(0)=-3$, $f(1)=6$, $f(2)=8$ and $f(3)=12$ then $\Delta^3 f(0)$ is

(a) 9 (b) 6 (c) 5 (d) 3

Q.11. The value of $\Delta \log x =$

(a) $\log(1+hx)$ (b) $\log(1+h/x)$

(c) $\log(1-h/x)$ (d) None of these

Q.12 The value of $\Delta^2 \cos 2x =$

(a) $4\sin^2 h \cos(2x+2h)$ (b) $-4\sin^2 h \cos(2x+2h)$

(c) $\sin^2 x \cos(2x+2h)$ (d) none of these

Q.13. The value of $\left(\frac{\Delta^2}{E}\right) e^x \cdot \frac{E e^x}{\Delta^2 e^x} =$

(a) e^x (b) e^{-x} (c) e^{2x} (d) none of these

Q.14. The third difference with arguments 2, 4, 9, 10 of the function $f(x) = x^3 - 2x$ is

(a) 0 (b) 1

(c) 2 (d) none of these

Q.15 If $P(1)=1$, $P(3)=27$ and $P(4)=64$, the unique polynomial $P(x)$ of degree 2 is given by

(a) $8x^2-19x-12$ (b) $8x^2+19x-12$

(c) $8x^2-19x+12$ (d) none of these

Q.16. If $y = a\cdot 2^x + 5x2^x$ and $h=1$ then

$(\Delta^2 - 2\Delta + 1)\, y =$

(a) 1 (b) 2 (c) 0 (d) none of these

Q.17. The cubic polynomial which takes the following values:

$y(0)=1$, $y(1)=0$, $y(2)=1$, and $y(3)=10$

Then the value of $y(4)=$

(a) 33 (b) 36 (c) 30, (d) none of these

Q.18 A second degree polynomial passes through $(0,1)$, $(1,3)$, $(2,7)$ and $(3,13)$. The polynomial is

(a) x^2+2x+1 (b) x^2+2x+1

(c) x^2+3x+1 (d) none of these