

Shyampur Siddheswari Mahavidyalaya

B.SC. Sem3(Internal Test) COMPUTER SCIENCE (Hons.) CC6

Total Marks-30

Time- 1Hr.

Q1. Answer Any 4 Question (Each Carrying 1.5 marks)

4X1.5=6

a) $\Delta^3(1-x)(1-2x)(1-3x)$ is equal to

- a) -6 b) -30 c) -3 d) -36

b) $x=9.05$, $y=6.56$, $\Delta x=0.001$, $\Delta y=0.003$. Relative error in $(x-y)$ is

- a) .00034 b) .000034 c) .0034 d) .0005

c) Which of the following is not true?

- a) $\Delta.V=\Delta-V$ b) $\Delta=E-1$ c) $(\Delta^2/E)x^3=x$ d) $\Delta.E=E.\Delta$

d) $\Delta^4 f(x)=0$, then degree of $f(x)$ would be

- a) 4 b) 5 c) ≤ 3 d) None of these

e) One root of $10^x + \sin x + 2x = 0$ lies between

- a) (0,1) b) (-2,-1) c) (-1,0) d) (0,0.5)

f) One root of $\sin x + \cos x - 1 = 0$ lies between

- a) (1.5,1.7) b) (1,1.4) c) (0,1.2) d) (1.5,3) e) both a and d

Q2. Answer Any 4 Question(Each Carrying 6 marks)

4X6=24

a) Find $f(x)$ and $f(6)$, having the following given table:

x	0	1	2	3	4	5
f(x)	41	43	47	53	61	71

b) Compute the missing term in the following table:

x	1	2	3	4	5	6	7
f(x)	2	4	6	-	32	64	128

c) Using Lagrange interpolation find $f(0)$ from the following table:

x	-1	-2	2	4
f(x)	-1	-9	11	69

d) Calculate _____ by Simpson 1/3 rule taking $h=1/2$.

e) Compute _____ by Trapezoidal rule taking $h=0.1$

f) Prove that $e^x = (\Delta^2/E)e^x$ taking interval of differenc is h.

g) State and prove Newton's forward interpolation formula

h) State and prove Lagrenge's interpolation formula to find $f(x)$ for $x+1$ unequispaced arguments $x_0, x_1, x_2, \dots, x_n$.