

SECTION B — (5 × 5 = 25 marks)

Answer any FIVE questions.

All questions carry equal marks.

Each answer should not exceed 200 words.

13. Write an algorithm for computation of a root of  $f(x) = 0$  by Newton-Raphson method.

14. Solve the following system by Gauss elimination method :

$$\begin{aligned} x_1 + 2x_2 + x_3 &= 0 \\ 2x_1 + 2x_2 + 3x_3 &= 3 \\ -x_1 - 3x_2 &= 2. \end{aligned}$$

15. Write an algorithm for the evaluation of  $\int_a^b f(x) dx$  by Simpson's one-third rule.

16. Using Euler's method, compute  $y(0.1)$  and  $y(0.2)$  for the initial value problem,

$$y'' + y = 0, y(0) = 0, y'(0) = 1.$$

17. Find the Arithmetic mean of the following frequency distribution :

X:	5	10	15	20	25	30	35	40	45	50
Y:	20	43	75	67	72	45	39	9	8	6

18. Given that  $P(A) = 0.35$ ,  $P(B) = 0.73$  and  $P(A \cap B) = 0.14$ , find

- (a)  $P(A \cup B)$
- (b)  $P(A \cap \bar{B})$
- (c)  $P(\bar{A} \cup \bar{B})$ .

19. Calculate Rank Correlation coefficient for the following data :

Roll Nos :	1	2	3	4	5
Mathematics Marks :	85	60	73	40	90
Accounts Marks :	93	75	65	50	80

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

All questions carry equal marks.

Each answer should not exceed 500 words.

20. Solve the following system by Gauss-Seidal Iteration method :

$$\begin{aligned} 20x_1 + 2x_2 + x_3 &= 30 \\ x_1 - 40x_2 + 3x_3 &= -75 \\ 2x_1 - x_2 + 10x_3 &= 30 \end{aligned}$$

Give the solution correct to three significant figures.