

OCTOBER 2013

P/ID 17405/RBE

Time : Three hours

Maximum : 75 marks

PART A — (5 × 5 = 25 marks)

Answer ALL questions.

1. (a) Explain the I/O statements with examples.

Or

(b) Write a program in FORTRAN to find the maximum among n numbers.

2. (a) Describe subscripted variables with examples.

Or

(b) Explain the COMMON statement with example.

3. (a) Write a note on floating point representation.

Or

(b) Find a real root of the equation $x^3 + x^2 - 100 = 0$. Correct to 4 decimal places by using iteration method.

4. (a) Solve the following equations by Gauss – elimination method.

$$2x + y + 4z = 12$$

$$8x - 3y + 2z = 20$$

$$4x + 11y - z = 33.$$

Or

- (b) Discuss Gauss — Jordon method.

5. (a) From the following table of values of x and y, find dy/dx and d^2y/dx^2 .

X:	1.00	1.05	1.10	1.15
Y:	1.00000	1.02470	1.04881	1.07238
X:	1.20	1.25	1.30	
Y:	1.09544	1.11803	1.14017	

Or

- (b) Dividing the range into 10 equal parts, find the approximate value of $\int \sin x \, dx$ by Simpson's rule.

PART B — (5 × 10 = 50 marks)

Answer any FIVE questions.

6. Explain various IF statements used in FORTRAN with examples.
7. Write a FORTRAN program to arrange the given set of numbers in an descending order.
8. Discuss the functions, function subprograms and subroutines with suitable examples. Also differentiate them.
9. Using Newton — Raphson method, establish the formula $x_{n+1} = \frac{1}{2}(x_n + N/x_n)$ to calculate the square root of N. Hence find the square root of 5 correct to 4 decimal places.
10. Determine the root of $xe^x - 3 = 0$. Correct to 3 decimal places, using the method of false position.
11. Solve the following equations by Gauss – Seidal method.
 $27x + 6y - z = 85$
 $6x + 15y + 2z = 72$
 $x + y + 54z = 110.$

12. Solve the equation $dy/dx = 1 - y$ with the initial condition $x = 0, y = 0$. Using Euler's algorithm and tabulate the solution at $x = 0.1, 0.2, 0.3$ and 0.4 .
 13. Using the Predictor - corrector equations, evaluate $Y(1.4)$ if y satisfies $dy/dx + y/x = 1/x^2$ and $Y(1) = 1$. $Y(1.1) = 0.996$, $Y(1.2) = 0.986$, $Y(1.3) = 0.972$.
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