

No. of Printed Pages : 03

Roll No.

G-227

B. Tech. EXAMINATION, Dec. 2017

(Seventh Semester)

(Old Scheme) (Re-appear Only)

(IT)

IT-413

NUMERICAL METHODS

Time : 3 Hours]

[Maximum Marks : 100

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Section. Answer to the point.

(2-18/17) M-G-227

P.T.O.

Section A

1. Explain the representation of signed floating point numbers. **20**
2. Calculate 1 1000 0001 110...0 plus 1 1000 0010 00110...0 both are single-precision IEEE 754 representation. **20**
3. Use Bisection Method to find the only real root of the equation $x^3 + x - 1 = 0$ correct to 6 decimal places. **20**
4. Set up Newton-Raphson iterative formula for the equation : **20**

$$x \log_{10} x - 1.2 = 0$$

Section B

5. Obtain Newton's divided difference interpolating polynomial satisfying the following values : **20**

x	:	1	3	4	5	7	10
$f(x)$:	3	31	69	131	351	1011

and find $f(4.5)$, $f(8)$ and the second derivative of $f(x)$ at $x = 3.2$.

6. Using Trapezoidal rule solve the integral,

$$\int_0^1 \frac{1}{x^2 + 6x + 10} dx \text{ with four subintervals. } \mathbf{20}$$

7. Using Taylor series, solve $y' = x - y^2$, $y(0) = 1$. Also find $y(0.1)$ correct to four decimal places. **20**
8. Given $f(2) = 9$ and $f(6) = 17$. Find an approximate value for $f(5)$ by the method of Lagrange's interpolation. **20**