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Roll No. to be filled in your Answer Book

Roll No. | | | | | | | | | | | |

B. Tech III Semester Examination Dec 2014

Computer Based Numerical Technique

Time: 3.00 Hrs] **[Max. Marks: 75**

Note: Attempt all questions, the marks assigned to each question is indicated at question itself.

Q1. Attempt any three (5X3)

(a) Find the positive real root of $\cos x = xe^x$ using" Regula Falsi methods".

(b) Using Picard method, solve $\frac{dy}{dx} = e^x - y^2 with\, x_0 = 0 and\, y_0 = 1$ up to third approximation.

(c) Find the positive root of $x^3 - 2x - 5 = 0$, correct to three decimal places using Newton's – Rephson method

(d) Find the root of $\int_0^1 \frac{1}{1+x^2} dx$ by Waddle's rule.

(e) show that the rate of convergence of newton Raphson method is 2.

Q2. Attempt any three (5X3)

(a) Find the missing figures in following table:

X:	0	5	10	15	20	25
Y:	7	11	—	18	—	32

(b) Find the positive root of 3x=cosx+1 , correct to three decimal places using Iteration method

(c) Find the positive root of $x^3 - 2x - 5 = 0$ correct to three decimal places using Bisection Method.

(d) Fit the straight line to the following data:

X	1	2	3	4	5	6
y	1200	900	600	200	110	50

(e) The two regression equation of the variable x and y are x=19.13-0.87y and y=11.64-.50x
Find co relation coefficient and also regression coefficients.

Q3. Attempt any two (7.5X2)

(a) What is statistical quality control? Define various control charts.

(b) Find f(1.22)from the Gauss Backward method :

X	1.0	1.1	1.2	1.3	1.4
F(x)	0.841	0.891	0.932	0.963	0.958

(c)) If f(x) = 1/x, then show that f(a,b,c,d)= -1/(abcd)

Q4. Attempt any two (7.5X2)

(a) . Find f(1.22)from the Gauss forward method :

X	1.0	1.1	1.2	1.3	1.4
F(x)	0.841	0.891	0.932	0.963	0.958

(b) Find the cubic polynomial using Bassel's rule which takes the following values

X	3	7	9	10
F(X)	168	120	72	63

(c) From the following table:

x	1.7	1.74	1.78	1.82	1.86
sinx	0.9916	0.9857	0.9781	0.9691	0.9584

(A) Find at $\frac{dy}{dx}$ at $x = 1.74$

(B) Find $\frac{d^2y}{dx^2}$ at $x = 1.74$

Q5.Attemt any two **(7.5X2)**

(a) **Find the cubic polynomial using Striling formula which takes the following values**

x	3	7	9	10
F(x)	168	120	72	63

(b) Using the Gauss Seidel method, solve the following equation:
x+4y–z=–5; x+y-6z=–12; 3x–y–z=4

(c) Find $\int_0^5 \frac{1}{4x+5}dx$

(A) By the Simpson's 1/3rd method.

(B) By the Simpson's 3/8th method3