



5E3114-P	Roll No. : _____	Total Printed Pages : 3
	5E3114-P	
B. Tech. (Sem. V) (Main/Back) Examination, December - 2011 Electronics & Communication 5EC6.3 Computer Oriented Numerical & Statistical Methods (Common with 5EI6.2)		

Time : 3 Hours]

[Total Marks : 80
[Min. Passing Marks : 24

Instructions to Candidates :

Attempt any five questions selecting one question from each unit. All questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly.

Use of following supporting material is permitted during examination.
(Mentioned in form No. 205)

1. _____ Nil _____

2. _____ Nil _____

UNIT - I

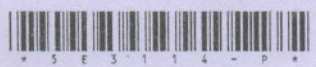
- 1 (a) Find the inverse following matrix by Gauss elimination technique.

$$A = \begin{bmatrix} -3 & 1 & 6 \\ 3 & -1 & 0 \\ 1 & 2 & 5 \end{bmatrix}$$

- (b) Find the rank of following matrix :

$$A = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

OR



1. (a) Write a C program to implement the matrix inverse by taking a matrix of order $m \times n$.
- (b) Write a C program to find multiplication and division of two matrices by order of $m \times n$ and $n \times m$ respectively.

UNIT - II

- 2 (a) Solve the system of equations

$$2x + y + 2 = 10$$

$$3x + 2y + 3z = 18$$

$$x + 4y + 4z = 16$$
 by gauss elimination method
- (b) Find the solution of the system of equations.

$$x_1 + x_2 + x_3 = 1$$

$$4x_1 + 3x_2 - x_3 = 6$$

$$3x_1 + 5x_2 + 3x_3 = 4$$

by Gauss - Jordan method

OR

Use Gauss - Seildan method to solve $x+y+2z=4$, $2x+2y+z-w=-1$, $y+z+w=6$, $7-z+2w=5$. Also write C codes for its implementation.

UNIT - III

- 3 (a) Find the real root of equation $x^2+4\sin x=0$ correct to three places of decimals by using regula falsi method. Also write c codes for its implementation.
- (b) Using bisection method, find the real roots of equation $x^3-9x=1=0$ correct to three places of decimals. Also write c codes for its implementation.

OR

- 3 (a) Estimate the roots of the equation $\cos x - xe^x = 0$ using secant method with initial value estimate of $x_1=0.5$ and $x_2=1$. Also write c codes for its implementation.
- (b) Describe the rate of convergence of regula falsi method and prove that $X_{n+1} = X_n - (X_n - X_{n-1})f(X_n)/f(X_n) \setminus (X_{n-1})$.

UNIT - IV

- 4 (a) Use Euler's method to solve $dy/dx=x+y$, $y(0)=1$ and obtain y for $x = 1$, the step size being 0.2. Also write c codes for its implementation.



- (b) Use Runge-Kutta method of 4th order to find $y(0.1)$ given that $dy/dx = 1/x + y$, $y(0) = 1$. Also write c codes for its implementation.

OR

- 4 (a) Obtain Fourier transform from given Laplace transform.

$$s = j\omega$$

$$L[x(t)] = X(s) \Rightarrow X(j\omega) = F(x(t))$$

- (b) Use Milne's P-C method to find $y(0.8)$ given that $dy/dx = y - x^2$, $y(0) = 1$, $y(0.32) = 1.12186$, $y(0.4) = 1.4682$, $y(0.6) = 1.7379$. Also write c codes for its implementation.

UNIT - V

- 5 (a) Calculate the coefficient of correlation and obtain the line of regression for following data.

x	1	2	3	4	5	6	7
y	9	8	10	12	11	13	14

- (b) Write notes on following :
(i) Partial and multiple correlations
(ii) Partial and multiple regression

OR

- 5 (a) Fit a second order polynomial to the following data.

i	1	2	3	4	5	6
x	0	0.5	1.0	1.5	2.0	2.5
y	0	0.25	1.0	2.25	4.0	6.25

- (b) Describe the least square approach of curve fitting with example.

