B.Sc Sem. V. 4315

2:30

TIME : 2½ HOURS

M-504: ADVANCED NUMERICAL METHODS

Oct-2015

TOTAL MARKS:70

INSTRUCTIONS: (1) All questions are compulsory.
(2) Each question carries equal marks.

Q.1	A	Discuss: Muller's method	[7]
	B	Find the smallest root of the equation $x+x^2+x^3=1$ using Ramanujan's method	[7]
		OR	
Q.1	A	Discuss: secant method	[7]
	B	Find the real root of the equation $x^3-2x^2+x-2=0$ using Lin Bairstow's method	[7]
Q.2	A	Find the real root of the equation $x^3-4x^2+5x-2=0$ using Graffee's root squaring method	[7]
	B	Discuss: Lin Bairstow's method	[7]
		OR	
Q.2	A	Discuss: Quotation difference method	[7]
	B	Discuss : Ramanujan's method	[7]
Q.3	A	Using Horner's method find the root of $f(x)= x^3+x^2+x-100=0$ correct up to three decimal places	[7]
	B	Discuss : Gauss Jordan method	[7]
		OR	
Q.3	A	Discuss: Crout's method	[7]
	B	Solve the system of equation $2x+4y+2z=15, 2x+y+2z=-5, 4x+y-2z=0$ using Gauss elimination method	[7]
Q.4	A	Discuss : Method of factorization	[7]
	B	Solve the system of equation $9x+2y+z=50$, $x+5y-3z=18$, $-2x+2y+7z = 19$ using Relaxation Method	[7]
		OR	
Q.4	A	Find the inverse of matrix $A = \begin{bmatrix} 1 & 2 & 5 \\ 0 & -1 & 2 \\ 1 & 3 & 1 \end{bmatrix}$ using Crout's method	[9]
	B	Discuss Relationships between Root's and co-efficient	[5]
Q.5	A	If α, β and γ are the roots of the equation $x^3+px^2+qx+r=0$ find the value of $\sum\alpha^2$, $\sum\alpha^2\beta\gamma$, $\sum(\alpha-\beta)$, $\sum\frac{1}{\alpha}$	[8]
	B	Remove the second term in the transformed equation of $x^4-8x^3-x^2+68x+60=0$ and hence solve it.	[6]
		OR	
Q.5	A	if α, β *and* γ are the roots of $x^3+ax^2+bx+c=0$, form the equation whose roots are : (1) $\alpha+\beta$, $\gamma+\beta$, $\alpha+\gamma$ (2) $\frac{\alpha}{\gamma+\beta}$, $\frac{\beta}{\alpha+\gamma}$, $\frac{\gamma}{\alpha+\beta}$	[10]
	B	Solve $x^3 + 7x^2 + 8x - 16 = 0$, given that it has a double root	[4]