Question Bank

Subject : Mathematics Paper II sem VI (Numerical Method)

Unit I

1)Find the root, correct to the three decimal places & laying between 2&3 of the equation X^3-2x^2-5 By using Bisection Method.

2)Find the root, correct to the three decimal places & laying between 2&3 of the equation X^3-2x^2-5 By using regula falsi Method.

3) By Using Newton Raphson Method to find a real root of x sin x +cos x =0 near x =π iteration upto 4 decimal places.

4) Given $\frac{dy}{dx} = 1+y^2$ where y(0)=0. Find y(0.2) &y(0.4) by Runge kutta fourth order formula.

5) Find the root, correct to the three decimal places & laying between 2&3 of the equation X^3- x-1 By using Bisection Method.

6) Find the root, correct to the three decimal places & laying between 2&3 of the equation X^3- x-1 By using falsi position Method.

7) Find the rootof the equation X^3- 2x-5=0 By using secant Method.

8) Find the rootof the equation X^3- x-1=0 By using secant Method.

Unit II

1) 3)Using Newton Forward differential formula .find the sum sn=1^3 +2^3 +3^3+……

2) Find the cubic polynomial which takes the following values y(1)=24, y(3)=120,y(5)=336,y(7)=720.Hence ,or otherwise obtain the value of y(8)

3) Value of x(in degree)and sin x are given in following table.

X in degree	Sin x
15	0.2588190
20	0.3420201
25	0.4226183
30	0.5
35	0.5735764
40	0.6427876

Determine the value of sin 38^0 by using Newton's Backward Difference Formula.

4) The table below gives the value of tan x for $0.10 \leq x \leq 0.30$

X	Y= tan x
0.10	0.1003
0.15	0.1511
0.20	0.027
0.25	0.2553
0.30	0.3093

find tan (0.12) , tan (0.30)

5) For the following table,find the value of $e^{1.17}$ .using Gauss forward formula.

X	Y= e^x
1.00	2.7183
1.05	2.8577
1.10	3.0042
1.15	3.1582
1.20	3.3201
1.25	3.4903
1.30	3.6693

6) The following table gives the value of e^x for a certain equidistant values of x and find the value of e^x for x=0.644. using stirling and Bessel's Formula.

x	$Y=e^x$
0.61	1.840431
0.62	1.858928
0.63	1.877610
0.64	1.896481
0.65	1.915541
0.66	1.934792
0.67	1.954237

7)Certain corresponding value of x and log x are (300,2.4771),(304,2.4829)&(307,2.4871).Find log 301.

Unit III

1) from the following table of values of x & y .obtain $\frac{dy}{dx}$ and $\frac{d2y}{dx2}$ for x =1,2

x	y
1.0	2.7183
1.2	3.3201
1.4	4.0552
1.6	4.9530
1.8	6.0496
2.0	7.3891
2.2	9.0250

2)Calculate 1st and 2nd derivatives of the function tabulated in the previous table at the point x=2.2 and also $\frac{dy}{dx}$ at x=2.0

x	y
1.0	2.7183
1.2	3.3201
1.4	4.0552
1.6	4.9530
1.8	6.0496
2.0	7.3891
2.2	9.0250

3)Find $\frac{dy}{dx}$ and $\frac{d2y}{dx2}$ at x=1.6 for the tabulated function

x	y
1.0	2.7183
1.2	3.3201
1.4	4.0552
1.6	4.9530
1.8	6.0496
2.0	7.3891
2.2	9.0250

4)Find the From the given table,the area bounded.by the curve and the x-axis from x= 7.47 to x=7.52

x	F(x)
7.47	1.93
7.48	1.95
7.49	1.98
7.50	2.01
7.51	2.03
7.52	2.06

5)Evaluate I = $\int_0^1 \frac{1}{1+x}$ dx . correct to three decimal placed saved by trapezoidal and simpson's rule with h = 0.5 ,0.25 , 0.125 resp.

6)use the euler maclaurin formula to prove, $\sum x^2 = \frac{n(n+1)(n+2)}{6}$

Unit IV

1)Given that differential equation ,y''- xy'-y = 0. With the condition y(0)=1 & y'(0) = 0 use Taylor's series method,to determine the value of y(0.1) correct to the seven decimal places.

2)Use of Picards method to obtain $y^{(1)}$ and $y^{(2)}$ .solve the equation $y'=x+y^2$,subject to the constraint y=1 when x=0 &find $y^{(2)}$.

3)Determine the value of y when x=0.1 given that y(0)=1 & $y'=x^2 + y^2$ by modified Euler's method take h=0.05

4) Given, $\frac{dy}{dx}$ $=1+y^2$ where,y(0) =0.find y(0.2)and y(0.4) by Runge kutta fourth order formula.