Q U E S T I O N – B A N K
BCA SIX SEMESTER - 2014
NUMERICAL METHODS – 601

U N I T – I

Q. 1 : Evaluate $\sqrt{2}$ to four places of decimal by using Newtow-Raphson method.

Q. 2 : Find the real root of the equation

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

Correct to four decimal places by using false position method.

Q. 3 : Define the following terms giving examples:-

(1) Round-off error (2) Truncation error

(3) Absolute error (4) Relative error

(5) Percentage error

Q. 4 : Explain now floating point number are stored in computers?

Q. 5 : Find a real root of the equation $f(x) = x^3 - 2x - 5 = 0$, using bisection method in five stage?

Q. 6 : By Iteration Method, find the real root of the polynomial $x^3 + x^2 - 1 = 0$ correct to three decimal places.

Q. 7 : Use Secant Method to compute a root of the equation $e^x - 3x = 0$

U N I T – II

Q. 1 : Solve the following system by Gausses Elimination Method?

$$6x_1 + 3x_2 + 2x_3 = 6$$
$$6x_1 + 4x_2 + 3x_3 = 0$$
$$20x_1 + 15x_2 + 12x_3 = 0$$

Q. 2 : Apply Gauss Jordan Method to solve

$$x + 2y + z = 8$$
$$2x + 3y + 4z = 20$$
$$4x + 3y + 2z = 16$$

Q. 3 : Solve: $27x + 6y - z = 85$
$6x + 15y + 2z = 72$
$x + y + 54z = 110$
by Jacobi's Iteration Method.

Q. 4 : Solve: $20x + y - 2z = 17$
$3x + 20y - z = -18$
$2x - 3y + 20z = 25$
by Gauss-Seidel Method.

U N I T – III

Q. 1 : (A) Evaluate the following taking unity as interval

(i) $\Delta \left[\frac{2^x}{(x+1)!} \right]$

(ii) $\frac{\Delta^2}{E} x^2$ [here h = 1]

(B) Prove that

(i) $e^x = \frac{(\Delta^2)}{E} e^x . \frac{E e^x}{\Delta^2 e^x}$

(ii) $(E^{1/2} + E^{-1/2})(1 + \Delta)^{1/2} = (2 + \Delta)$

Q. 2 : Estimate the missing term in the following :-

x	:	1	2	3	4	5	6	7
y	:	2	4	8	?	32	64	128

Q. 3 : (A) Using Newton's forward Interpolation formula. Find the value of f (1.6), it:-

x	:	1	1.4	1.8	2.2
y	:	3.49	4.82	5.96	6.5

(B) Estimate the Role for 1996 using the following table :-

Year	:	1931	1941	1951	1961	1971	1981
Sale of Thousand	:	12	15	20	27	39	52

Using Newton Back-word Interpolation Formula.

Q. 4 : By means of Newton's divided difference formula. Find the value of f (8), f (9) and f (15) from the following table :-

x	:	4	5	7	10	11	13
y (n)	:	48	100	294	900	1210	2028

Q. 5 : Using the following table find f (n) as a Polynomial in power of (x-6) :-

x	:	-1	0	2	3	7	10
y	:	-11	1	1	1	141	561

Q. 6 : Apply Lagrange's formula to find f (5) given that f (1) = 2, f (2) = 4, f (3) = 8, f (4) = 16, f (7) = 128 and explain why the result differs from 2^5.

Q. 7 : Apply Lagrange's formula inversely to find a root of the equation f (x) = 0 when f (30) = -30, f (34) = -13, f (38) = 3 and f (42) = 18.

U N I T – IV

Q. 1 : Calculate the first and second derivatives of the function tabulated below at the point x = 1.1.

x	:	1.0	1.2	1.4	1.6	1.8	2.0
y = f (n)	:	0	0.1280	0.5440	1.2960	2.4320	4.0000

Q. 2 : Find f1 (10) from the following data :-

x	:	3	5	11	27	34
f (n)	:	-13	23	899	17315	35606

Q. 3 : Prove that Simpson's one third Rule.

$$I = \int_{x_0}^{x_0+nh} y\,dx = 1/3h\,[y_0 + y_n) + 4\,(y_1 + y_3 + \ldots\ldots\ldots + y_{n-1})] + 2\,[(y_2 + y_4 + \ldots\ldots + y_{n-2})]$$

Q. 4 : Prove that Simpson's three-eight rule.

$$I = \int_{x_0}^{x_0+nh} y\,dx = 3h/8\,[y_0 + y_n) + 3\,(y_1 + y_2 + y_4 + y_5 + \ldots\ldots\ldots + y_{n-2} + y_{n-1}) + 2\,(y_3 + y_6 + \ldots\ldots + y_{n-3})]$$

Q. 5 : Find the value of log2 from $\int_0^1 1x^2/1 + x^3 dx$ using Simpson's 1/3 rule by divided the range into four equal parts. Also find the error.

Q. 6 : Evaluate $\int_0^{5-2} \log_e x dx$ using Simpson's 3/8 rule.

Q. 7 : Calculate by Simpson's Trapezoidal rule value of $\int_{-3}^{3} x^4 dx$ by taking seven equidistant ordinete.

U N I T – V

Q. 1 : Using Euler's modified method, obtain a solution of the equation dy/dx = 1-y = f (x, y) with y (0) = 0 in the range $0 \le x \le 0.2$ by taking h = 0.1

Q. 2 : Using Taglor's series, fine the solution of the differential equation xy' = x – y, y (2) = 2 at x = 2.1 correct to five places of decimal.

Q. 3 : Use Picards method to approximate y when x = 0.1, x = 0.2 given that y = 1 when x = 0, dy/dx = x + y. Check the result with the exact value.

Q. 4 : Tabulate by Milne's method the numerical solution of (dy/dx) = x + y with initial conditions $x_0 = 0$, $y_0 = 1$ from x = 0.20 to x = 0.30.

Q. 5 : Use Range-kutta Method to approximate g when x = 0.1, given that x = 0 when y = 1 and dy/dx = x = y.

Q U E S T I O N – B A N K
BCA SIX SEMESTER - 2014
JAVA PROGRAMMING – 605

U N I T – I

Q. 1 : What is Java? Explain the Feature of Java?
Q. 2 : What is JVM? Explain the Working of JVM?
Q. 3 : Explain different Data Type used in Java?
Q. 4 : Explain Constants and variable used in Java?
Q. 5 : How is Java Strongly Associated with Internet?
Q. 6 : Explain the following terms :-
- (A) Garbage Collector
- (B) Element of Java
- (C) Byte Code
- (D) C++ V/s Java

Q. 7 : Write a Java Program to find the sum of the series 1! + 2! + 3! + ---for term in the series?
Q. 8 : Write a Program to find the sum of all Old Number in an Array Integer?
Q. 9 : Write a Program that calculate the area and circumference C of a circle a = pxr2, c = 2xpxr
Q.10: Write a Program the read n Integer from the Keyboard and calculate their sum?
Q.11: Write a Program to find the sum of Digit of Enter Number?
Q.12: Write a Program to accept a list of word at command line and print how many word will enter by used?

U N I T – II

Q. 1 : What is Class? What is the difference between Class and object?
Q. 2 : How in Heritance is achieved in java. Illustrate with one example?
Q. 3 : Write a program in java for method overloading?
Q. 4 : What do you mean by Abstract Methods and Classes in Java? Explain through example?
Q. 5 : Describe Overriding in Java with example?
Q. 6 : When do we declare a method or classes abstract given an example?
Q. 7 : How do we invoke a constructor? Explain with an example?
Q. 8 : Discuss the different level of access protection available in Java?
Q. 9 : Write short note on Static member of class?
Q.10: Write a Java Program to count how many object of a class have been created?
Q.11: Explain the concept of final variable and methods? Explain it with suitable example?
Q.12: Write a Program to find the x to the power y use overloading different cases when x and y are combination of integer and flow?

U N I T – III

Q. 1 : What is Interface? Discuss its properties and uses?
Q. 2 : What is Package? Discuss System Package?
Q. 3 : Explain Wrapper Classes with example?
Q. 4 : How do we add a class or an interface to a package?
Q. 5 : Write a program which will read a tend and cannot all occurrence of a particular word?
Q. 6 : What is a Vector? How is it differencing from an Array? Explain with example?
Q. 7 : What is Static Import? How is it used full explain?
Q. 8 : Write a program which will read a strong and rewrite it in the alphabetical order for example strong should be written as GINRST?

U N I T – IV

Q. 1 : How a new thread can be created? Explain Thread Class constructors?
Q. 2 : Discuss Inter thread Communication with suitable program?
Q. 3 : What is Thread? Discuss its life Cycle with pictorial representation?
Q. 4 : Describe Thread and its Utility in Java?
Q. 5 : Explain Thread Life Cycle in Java?
Q. 6 : Describe Thread Inception?
Q. 7 : How we intend the thread class. Explain implementing the Runable interface?
Q. 8 : What is Synchronization? When do we use its?
Q. 9 : What is Multithreading? How does it improve the performance of Java?
Q.10: What do you understand by Inter thread communication?
Q.11: How a new thread can be created explain thread class constructor?
Q.12: Discuss thread priority with suitable examples?
Q.13: Briefly explain high level thread static?

U N I T – V

Q. 1 : Explain Applet Tag with attributes of this Tag?
Q. 2 : Develop an Applet that receives three numeric values as input from the uses and then display the largest of the three on the screen? Write a HTML page and test the Applet?
Q. 3 : Describe the different Stages in the Life Cycle of an Applet? Distinguish between int ( ) and Start ( ) Methods?
Q. 4 : Describe Passing Parameter to Applets with suitable examples?
Q. 5 : Describe the Life Cycle of Applet?
Q. 6 : Write Tages :-

(A) Applet Tag
(B) Aligning the Display
(C) HTML Tags and Applet
(D) Applet Application

Q. 7 : Design an Applet to display different Shapes?
Q. 8 : Define Native Classes? Different between Applet and Java Application?
Q. 9 : Write short note on (Any four) :-

(A) Applet and it Application
(B) Life Cycle of an Applet
(C) Different between C++ and Java