Note: Attempt all questions. Each question carries equal marks.

Q1. Describe Regula-falsi method and derive its iterative formula. It is given that one real root of the equation $x^6 - x^4 - x^3 - 1 = 0$ lies between 1.4 and 1.5. Find that root correct to three significant digits. Also, implement the method in R or Fortran language.

Q2. Explain the Least Square Method. Given the data below:

X:	1.2	1.4	1.6	1.8	2.0	2.4
Y:	4.2	6.3	8.4	11.6	15.0	24.2

Determine the both regression lines. Also, prove that they intersect at $(\bar{x}, \bar{y})$.

DEAPARTMENT OF COMPUTER SCIENCE

Sessional Ist- Computer Networks and System Administration (CSCC 35), MCA-III Sem   TIME: 60 mnts   M.M. : 15

NOTE: *ATTEMPT ANY three QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS.*

(1) Briefly discuss OSI reference model.

(2) Discuss fiber optics cabling system along with its advantages and disadvantages.

(3) Illustrate the solution of the problem occurred as a consequence of the rule requiring a sender to wait for an acknowledgement before sending another frame.

(4) Assume we need to download text documents at the rate of 100 pages per second. What is the required bit rate of the channel? Consider a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with four signal levels What will be the maximum bit rate?

$$8 \times 24 \times 80 \times 100 = 24 \times 8 \times 100 \times 100 = 1920 = 1.92 Mbh$$

1 byte   chara in/lines   pages

DEPARTMENT OF COMPUTER SCIENCE
Jamia Millia Islamia, New Delhi-25

M.C.A., III Semester, First Sessional Test Examination, September 17, 2019

CSCC34: Analysis and Design of Algorithm

Max. Marks: 15

Time: 1 Hour

Instructions: *Attempt all Questions. Answer in brief and avoid unnecessary details.*

Q1. What is an algorithm? Suppose that the number 8759432976 is stored in an integer type array **(5)** x[] (as below). Write an algorithm to multiply this number by x, where $1 < x < 3641$, and store the result in same array and print the result.

Ans(s):

						8	7	5	9	4	3	2	9	7	6

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

Q 2. Define the indicator random variable. Let $X_{ij} = I\{z_i$ is compared to z_j in quick sort algorithm} is an **(5)** indicator variable, and z_i is the ith smallest number. Determine the value of $X_{i,j}$ for each $i = 1...4$ and $j = i+1...5$ if the given list is: 5, 2, 3, 1, 4.

Q3. What is longest common sub-sequence problem? List all the prefixes of the sequence X = <j, a, **(5)** m, i, a>.

Jom, si Ja.

JAMIA

$2^5 - 1 = 31$

length 1
length 2
length 3
length 4
lengths 5

Total

Answer all questions.

Time: 1 hr.

Q1) Attempt all:

(2 +3 marks)

a) Who are the actors on the scene?

b) Explain DBMS. What is the advantage of using database management systems?

Q2) Attempt all:

(1+2+2 marks)

a) Write SQL query to retrieve all rows from the table client_master and display this data sorted on the values contained in the client_no in ascending order.

b) Explain the Substr function in Oracle citing an example.

c) Explain use of wildcard characters in Oracle with some example.

Q3) Attempt all:

(1+2+2 marks)

a) Explain the PL/SQL block of code.

b) Write a PL/SQL program to enter the radius of a circle and print its area.

c) Explain the various types of Cursors available.

DEPARTMENT OF COMPUTER SCIENCE
Jamia Millia Islamia

SESSIONAL TEST – I
(Odd Semester, 2019-20)

Course: CBCS for PG (Sem–III) Subject: CBCS31 (Adv. Prob. Sol.using Java)
Duration: 1 hour   Max. Marks: 15

Attempt **ALL** the questions.
All questions carry equal marks. Restrict to the relevant answers only.

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1. What are the classes in Java to deal with Big Numbers? Define a method "`calFact(int n)`" which returns the factorial of 'n' as a `BigInteger` object. Show the working of the method in the main program.

2. Why multiple inheritance is not supported in Java? Write down the restrictions of static data and static methods.

3. What is the purpose of CLASSPATH environment variable in Java? How interface is different from class? Explain with code example.