22-11-19

DEAPARTMENT OF COMPUTER SCIENCE

Sessional II- 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) Compare datagram and virtual- circuit subnets based on five issues/parameters.
(2) Illustrate IP protocol header.
(3) What is CSMA? Draw a flow diagram for showing the working of the CSMA/CD.
(4) Illustrate Ethernet frame structure.

1 2 3 4

DEPARTMENT OF COMPUTER SCIENCE

Jamia Millia Islamia, New Delhi-25

M.C.A., III Semester, Second Sessional Test Examination, November 23, 2019

CSCC34: Analysis and Design of Algorithm

Time: 45 Minutes **Max. Marks:** 15

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

Q 1. Write backtracking algorithm for n-Queens problem and determine the total number of nodes in state space tree of this problem. **(5)**

Q 2. Find the optimal tour for the graph whose adjacency matrix is given as follows using **best first search with branch and bound** algorithm. Show your actions step by step. **(5)**

	1	2	3	4
1	0	3	9	10
2	8	0	2	7
3	8	9	0	1
4	2	8	10	0

Q 3. What is NP-Complete problem? Discuss with example

MCA III semester

2nd Test: Scientific and Statistical Techniques using R/Fortran (CSCC36), 2019

Time: 1. Hr. **Max Marks: 15**

Note: Attempt four Questions out of six questions.

a. Derive formula for Simpson's 1/3rd Rule.

b. Explain Quartile and percentile with the help of suitable examples.

c. Calculate the correlation coefficient between X & Y for the following data.

X	1	2	3	4	5	6	7	8	9
Y	10	11	12	14	13	15	16	17	18

d. In an examination 30% of students have failed in chemistry and 20% have failed in Botany and 10% have failed in both Chemistry and Botany. A student is selected random.

i. What is the probability that a student has failed in Chemistry if it is known that he has failed in Botany?

ii. What is the Probability that the student has failed either in Chemistry or in Botany?

e. Applications of fertilizers were tested for the yield of rice grown in 10 plots. Another seed of 10 plots of similar size & condition were taken as control. Test the effect of fertilizer. Given t_{tab}=2.10.

Plot no	1	2	3	4	5	6	7	8	9	10
Fertilizer Applied	16	14	18	15	13	17	16	15	14	13
Fertilizer not applied	10	12	11	9	13	13	12	14	13	11

f. What is ANOVA? Write steps for calculating one way ANOVA.

DEPARTMENT OF COMPUTER SCIENCE

Jamia Millia Islamia

SESSIONAL TEST – II

(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.

---

1. What is the purpose of Collection Framework? Write a short note in legacy collections.
2. What is inter-process communication (IPC)? How inter-thread communication is achieved in Java programming. Write with code example.
3. What is generic programming? Write a genetic method findHighest() which finds the highest value in a given generic array passed to it as parameter. For instance, if an integer array 'x[]' is passed to generic method findHighest(x), it should return the highest integer value in x. Demonstrate the working of this generic method for any two numeric data types.

Department of Computer Science

21-11-19

DBMS
Sessional II

Q1) Attempt all: (2+3 marks)

a) Explain EER diagram. How is it different from ER diagram?

b) Explain concept of specialization lattice with the University database.

Q2) Attempt all: (2+3 marks)

a) How are tuples ordered in a relation? What is the mathematical analogy?

b) What is the Project operation in DBMS? Explain with a suitable example.

Q3) Attempt all: (2+3 marks)

a) Compare between centralized and distributed databases.

b) What is Normalization? Explain the third normal form with an example.

JAVA

LAB TEST (MCA-III)

(Odd Semester, 2019-20)

Set - A

Attempt any **ONE** of the followings:

1. Write a menu-driven Java program to calculate compound interest (CI) of three banks (BankA, BankB, and BankC) using dynamic method dispatch and the concept of method overriding. The program takes Principle Amount, Duration in year as input from the user and display the CI. The yearly interest rates for the BankA, BankB and BankC are 10%, 9.5% and 9.25%, respectively. The program should belong to package, called "com.bank". In case of negative inputs, program should throw user-defined exception.

2. A university department stores the marks obtained by the students in a two-dimensional array. The rows represent the marks of a particular student and columns represent marks obtained in different courses. The aggregate percent marks of each students can be calculated by adding each row value divided by number of course (assume that highest marks of each course is 100). Write an application that should ask the user to input number of students and number of courses, allocate necessary memory space as two-dimensional integer array. Also ask the user to enter marks of each student in each course and store it to the allocated array. Calculate the percent marks of each students and calculate and display the following aggregate percent marks frequency distribution table:

   (a) 80 - 100

   (b) 60 - 79

   (c) 40 - 59

   (d) < 40