Paper Code: 118002 **Exam Code: 2277**

Bachelor of Science (Information Technology) Semester – II

COURSE CODE: BITL-2113

COMPUTER NETWORKS

Examination Time: 3 Hours **Max. Marks: 80**

Note: Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section. Each question carries 16 marks.

Section A

Q1. (a) What do you mean by Computer Network? Explain in detail the different topologies used in Computer Networks. (10)

(b) Explain Twisted Pair cable in guided transmission Media. (6)

Q2. Explain TCP/IP Model and compare TCP/IP Model with OSI Model. (16)

Section B

Q3.Explain the following:

(a) Modem

(b) Multiplexing (2X8)

Q4. Discuss the methods with example to detect a single-bit data error inNetworks. (16)

Section C

Q5. Design the network to show how Dijkstra shortest path algorithm works. (16)

Q6. Explain the following:

(a) CSMA

(b) Header format of IPV4 (2X8)

Section D

Q7. What are the various services provided by TCP? How Transmission Control Protocol works to send the data? (16)

Q8. Discuss Cryptography in detail. (16)

Exam Code: 118002 **Paper Code: 2278**

Programme: **Bachelor of Science (Information Technology)**
Semester- **II**
Course Title **Database Management System**
Course Code **BITL-2114**

Time Allowed: **3HRS** Maximum Marks: **80**

Serial no.	The question paper contains eight questions of equal marks (16 marks each) in sections (A to D). The candidate is required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.	Marks
	Section A.	
1.	Explain the structure of a database system. What is a schema? Discuss the levels of the database system.	**16**
2.	Define and discuss the components of an E-R diagram. Explain Entity set, Relationship set, Attributes, Generalization, and Participation with suitable examples.	**16**
	Section B.	
3.	(a) Discuss the basic concepts of Relational Algebra. Explain Selection, Projection, and Rename operations with examples. (b) Provide SQL queries for: i. Deleting a table. ii. Altering a table by changing the name of a column and dropping a constraint.	**8** **8**
4.	(a) Explain the introduction to SQL. Discuss Data types and Constraints. How tables are created and deleted using DDL commands? (b) Write SQL queries for: i. Creating a table with appropriate constraints. ii. Changing the type of a column in a table.	**8** **8**
	Section C.	
5.	Define Data Manipulation Language. Illustrate the operations of Insertion, Deletion, and Update in Data Manipulation Language (DML) with suitable examples.	**16**

6.	How do you handle NULL values in SQL? Discuss various operators used in querying data in SQL. Explain the clauses Where, Order By, Group By, and Having with suitable examples.	8
	Section D.	
7.	(a) Explore the concept of Views in SQL and evaluate their advantages for database management.	8
	(b) Explain the principles underlying Data Control Language (DCL) in SQL.	8
8.	(a) Define normalization and explain its significance. Explore the roles of Candidate Key, 1NF, 2NF, 3NF, BCNF, and 4NF with examples.	8
	(b) Elaborate on the procedural stages and constituent elements integral to Query Processing and Optimization.	

Exam Code: 118002
(50)

Paper Code: 2279

Programme: Bachelor of Science (Information Technology)
Semester-II

Course Title: Introduction to Object Oriented Programming-I

Course Code: BITL-2115

Time Allowed: 3 Hours

Max Marks: 80

Note: Each question carry equal marks. Candidates are required to attempt five questions, selecting at least one question from each section. The fifth question may be attempted from any section.

SECTION A

1. What are the various characteristics of object oriented programming (OOP) technique? How the member functions of class can be defined outside the class? Illustrate with an example. (16)
2. Write a note on:
   a) Instance
   b) Data hiding (16)

SECTION B

3. What is a copy constructor? What are the rules to be followed for declaring a copy constructor member function? Write a program to demonstrate the concept of copy constructor. (16)
4. What is a destructor? What is its use? What happens if we don't define destructor after a constructor? (16)

SECTION C

5. Explain the declaration, definition and calling of an overloaded functions with a program. (16)
6. Write a program to enter two numbers and display them before and after the operator overloading with prefix notation. (16)

SECTION D

7. Explain multilevel inheritance? Write a program to enter the information of n number of students and then display it using multilevel inheritance concept. (16)
8. What is a polymorphism? Explain its types with an example. (16)

Paper Code: 2280

Progamme	Exam Code	Course Code
Bachelor of Computer Applications	117902	BCAL-2118
Bachelor of Science (Information Technology)	118002	BITL–2118

Semester - II

Course Title: Statistical Techniques for Data Science

Time Allowed: 3 Hours **Max. Marks: 80**

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Use of non-programmable non-storage calculator is allowed. Each question carries 16 marks.

SECTION A

Q1. (a)What are various types of data and levels of measurement? (8)

(b) Explain creation of a Frequency distribution table by taking data of your choice. (8)

Q.2. (a) What is Standard Deviation? Explain the Mathematical Properties of Standard Deviation. (6)

(b) From the following data, comment - which of the two is more consistent. (10)

X	12	115	6	73	7	19	119	36	84	29
Y	47	12	76	42	4	51	37	48	13	0

SECTION B

Q3. Explain the concepts:

a) Event and Experiment
b) Independent and dependent Events
c) Equally-Likely Events
d) Mutually Exclusive Events (4X4)

Q.4 What is Skewness? Calculate the Pearson's coefficient of skewness from the following data:

Marks Above	10	20	30	40	50	60	70	80	90
No. of students	100	97	90	70	40	25	15	8	3

(16)

SECTION C

Q5. Explain Addition Theorem of Probability for Mutually Exclusive Events and Not Mutually Exclusive Events, taking examples of your choice. (16)

Q.6 (a) Explain Null Hypothesis and Alternate Hypothesis (8)

(b) The number of accidents per week in a certain city were as follows:

12, 8, 20, 2, 14, 10, 15, 6, 9, 4

Are these numbers in agreement with the belief that accident's numbers were same during these 10 week period?

(for v=9, $\chi^2_{0.05} = 16.92$) (8)

SECTION D

Q.7. (a) What is Analysis of Variance? Explain the uses and techniques of ANOVA. (8)

(b) Explain the steps to perform Correlation analysis in MS Excel. (8)

Q.8. The following tables gives yields of four varieties of wheat grown in two plots

Plots	Varieties			
	A	B	C	D
1	200	230	250	300
2	190	270	300	270
3	240	150	145	180

Is there any significant difference in the production of these varieties? (for V_1=8, V_2=3, F value at 5% level of significance is 4.07)

(16)