

**Exam Code: 118003** **Paper Code: 3264**

**(40)**

**Programme: Bachelor of Science (Information Technology)**  
**Semester-III**

**Course Title: Computational Problem Solving**

**Course Code: BITL-3111**

**Time Allowed: 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 — I**

1. Explain Process of Computational Problem Solving in Detail. 16
2. Explain the differences between Tuples and List. What are various operations that can be applied on them. 16

**Section — II**

3. Write a Program to print Fibonacci Series upto 1000 16

4. What are various types of Functions? How we can return multiple values from functions. 16

### Section — III

5. Explain Exception Handling in Python. How we can handled multiple exceptions in Python. Also explain try catch with else and finally block. 16
6. Explain the concept of files in python. Explain their advantages and disadvantages. Explain seek and tell methods in Python. 16

### Section - IV

7. Explain the SQL Manger in Python. Explain various SQL operations using Python. 16
8. Explain Object Oriented Programming in Python. Write a Program in Python to demonstrate the concept of overloading. 16

Exam Code: 118003

Paper Code: 3265

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

Course Title: Advanced Database Management System

Course Code: BITL-3112

Time Allowed: 3 Hours

Max Marks: 80

Note: Attempt five questions in all, selecting atleast one question from each section. Fifth question may be attempted from any section. Each question carries 16 marks.

#### Section A

Q1. What do you mean by **join method**? What are various join methods available in SQL? Explain one example of each method.

Q2. What do you mean by **set operation**? Explain various set operations that can be applied on SQL tables.

#### Section B

Q3. What is PL/SQL? Explain various conditional constructs and looping constructs of PL/SQL with examples.

Q4. Define the concept of **big data** with its characteristics and advantages.

#### Section C

Q5. Define NoSQL. Explain features and advantages of NoSQL.

Q6. Explain in details the CRUD properties of MongoDB.

#### Section D

Q7. Explain the aggregate framework of MongoDB.

Q8. Explain the following terms related with MongoDB:

- (a) Indexes      (b) Database backup.

**Exam Code: 118003**

**Paper Code: 3265-R**

**Programme: Bachelor of Science (Information  
Technology) Semester-III**

**Course Title: Advanced Database Management  
System**

**Course Code: BITL-3112**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note:** Attempt five questions in all, selecting atleast one question from each section. Fifth question may be attempted from any section. Each question carries 16 marks.

**Section A**

- Q1. How will you create and maintain indexes and views in SQL? Explain with suitable examples.
- Q2. (a) What do you mean by concurrency? What are problems of concurrency? Explain.  
(b) Explain various locking schemes to control concurrency in database system.

**Section B**

- Q3. Explain in brief the following terms of PL/SQL  
(a) Function (b) Procedure (c) Cursor and (d) Triggers
- Q4. Define the concept of big data with its characteristics and advantages.

**Section C**

- Q5. (a) What is NoSQL? Differentiate between structured and unstructured data.  
(b) Compare ACID and BASE properties.
- Q6. What are various data types in MongoDB? Explain create, update and delete terms related with MongoDB.

**Section D**

- Q7. What are various query performance methods in MongoDB? Explain.
- Q8. Explain following functions:  
count, sum, avg, max, min and push.

**Exam Code: 118003**  
**(40)**

**Paper Code: 3266**

**Programme: Bachelor of Science (Information Technology)**  
**Semester-III**

**Course Title: System Analysis and Design**

**Course Code: BITL-3113**

**Time Allowed: 3 Hours**

**Max Marks: 80**

**Note: Attempt five questions selecting at least one question from each section, fifth question may be attempted from any section. All questions carry equal marks (16)**

**SECTION A**

1. What is Feasibility Study? Explain the Importance and Steps to do feasibility study. 16
2. What are the Roles and Responsibilities of Systems Analyst? 16

**SECTION B**

3. What do you know about Architectural design and Data design? 16
4. What are different tools for Structured design? Explain. 16

**SECTION C**

5. What is Testing? What are different types of testing? 16

6. Explain the documentation tools used during the development of Information Systems. 16

**SECTION D**

7. What do you know about Quality Assurance? 16

8. What is Systems Maintenance? Compare various types of maintenance. 16

Note: Attempt five questions selecting at least one question from each section. fifth question may be attempted from any section. All questions carry equal marks (16)

**SECTION A**

1. What is Feasibility Study? Explain the importance and steps to do feasibility study. 16

2. What are the Roles and Responsibilities of Systems Analysts? 16

**SECTION B**

3. What do you know about Architectural design and Data design? 16

4. What are different tools for structured design? Explain. 16

Exam Code: 118003

Paper Code: 3267

Bachelor of Science (Information Technology) - Semester III

Course Title: Numerical Methods and Statistical Techniques

Course Code: BITL-3114

Time: 3 Hours

Max. Marks: 80

Note: Attempt five questions, selecting one question from each section. The fifth question can be attempted from any section. Each question carries 16 marks. Use of non-programmable calculator is allowed.

**SECTION A**

Q1. (a) Discuss absolute, relative and percentage errors with suitable examples?

(b) Find the roots of the equation  $x^3 - 4x - 9 = 0$  to 3 decimal places using Newton Raphson method.

Q2. Consider a polynomial  $f(x) = -10x^4 - 32x^3 + 32x^2 + 8x + 9 = 0$  whose one root lies between 1 and 2. Find the root with error less than 0.0001 (i.e. upto 3 decimal places) by Bisection method.

**SECTION - B**

Q3. (a) The area A of a circle of diameter d is given for the following values:

d:	80	85	90	95	100
A:	5026	5674	6362	7088	7854

Calculate the area of a circle of diameter 105 using Newton's Backward Difference method.

(b) Compare the Trapezoidal rule with Simpson's rule. Which is better and why?

Q4. Evaluate  $\int_{-2}^2 \frac{3x}{(4+x)^2} dx$  using the:

(a) Trapezoidal rule (Given  $n=6$ )

(b) Simpson's 1/3 rule (Given  $n=6$ ).

### SECTION - C

Q5. Find the value of Mean, Mode and Median from the data given below:

Weight (in Kg)	93-97	98- 102	103- 107	108- 112	113- 117	118- 122	123- 127	128- 132
No. of students	3	5	12	17	14	6	3	1

Q6. (a) For a group of 100 observations, the mean and the standard deviation were found to be 60 and 5 respectively. Later on it was discovered that a correct item 50 was wrongly copied as 30. Find the correct mean and standard deviation.

(b) Find Median and Mean Deviation from the following data:

Size	0-10	10-20	20-30	30-40	40-50	50-60	60-70
Frequency	7	12	18	25	16	14	8

### SECTION - D

Q7. What are the Properties of Correlation coefficient? Find Correlation coefficient from the following data:

X	2	3	5	7	6
Y	5	4	10	3	2

Q.8. From the following data, obtain the two regression equations:

X	25	28	35	32	31	36	29	38	34	32
Y	43	46	49	41	36	32	31	30	33	39



Paper Code: 3268

Programme	Exam Code	Course Code
Bachelor of Computer Applications	117903	BCAM-3117
Bachelor of Science (Information Technology)	118003	BITM-3117

**Semester-III**

**Course Title: Data Visualization**

**(20)**

**Time Allowed: 3 Hours**

**Max Marks: 50**

**Note: Attempt five questions, selecting one question from each section. The fifth question may be attempted from any section. Each question carry <sup>equal</sup> marks.**

**(Section A)**

1. What is data visualization? Explain its importance along with its application in various domains. (10)
2. Explain different UX design methods for visualization of data. (10)

**(Section B)**

3. What is DIKW pyramid? Explain each level of pyramid in detail. What methods need to be followed to climb up in this pyramid? (10)

4. Explain following visualization tools with applications:-

a) Histogram

b) Area Plot

(2x5=10)

**(Section C)**

5. Explain:-

a) Scatter plot

b) Bubble plot

c) Box plot

(4,3,3)

6. What do you mean by data visualization tool? Explain characteristics of visualization tool in detail.

(10)

**(Section D)**

7. What is Waffle chart? How to create Waffle chart? What customization can be performed to the Waffle chart?

(10)

8. a) What is storyboarding? How it is used for building narrative in visualization of data?

b) What do you mean by regression plots? Explain.

(7,3)