

Paper Code: 4255

Programme	Exam Code	Course Code
Bachelor of Computer Applications	117904	BCAL-4113 ✓
Bachelor of Science (Information Technology)	118004	BITL-4111 ✓

Semester-IV
Course Title: Internet Applications
(70)

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

Note: Attempt five questions in all. Each question carries equal (16) marks. Candidate are required to attempt at least one question from each section and fifth question can be attempted from any section.

Section A

1. What is Internet? How is it different from ordinary network? How does the Internet work? (16)
2. What is DNS? Explain the types and working of DNS? How DNS is different from IP address? (16)

Section B

3. a. Discuss the role of Frames of HTML?
- b. What is a form? Explain different form elements available in HTML. (8+8)

4. Write a note on:
- a. Images in HTML
 - b. Hyperlink in HTML
- (8+8)

Section C

5. What is CSS? Discuss various parts of CSS rule? Discuss the procedure for the creation of CSS. (16)
6. Describe various font and background families that can change the content creation? (16)

Section D

7. What is a Wordpress? How can we manage pages in a wordpress? (16)
8. a. What is a Plugin? Describe the role of plugin in creation of a website? List some plugins that comes with wordpress?
- b. Difference between page and post? (10+6)

Paper Code: 4256

Programme Name	Course Title	Course Code	Exam Code
Bachelor of Computer Applications	Applied and Discrete Mathematics	BCAL-4114 ✓	117904
Bachelor of Science (Information Technology)	Applied and Discrete Structures	BITL-4112 ✓	118004

Semester - IV**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. Each question carries 16 marks.

Section A

1. a. Verify that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ where

$$A = \{1, 2, 3, 4, \dots, 10\},$$

$$B = \{2, 4, 6, \dots, 10\},$$

$$C = \{2, 3, 5, 7\}$$

- b. Let $A = \{2, 4, 6, 8\}$, $B = \{2, 3, 5, 7\}$ and $U = \{1, 2, 3, \dots, 9\}$, then verify that

$$(A \cup B)^c = A^c \cap B^c$$

- c. In a survey of 260 college students, the following data were obtained:

64 had taken a Mathematics course

94 had taken computer science course

48 had taken a business course

28 had taken both mathematics and business course

26 had taken both mathematics and computer science course

22 had taken both computer science and business course

14 students had taken all the three courses

- i. How many students were surveyed who had taken none of the three types of courses?
- ii. Of the surveyed courses, how many had taken only computer science course?

(4+4+8)

2. a. In a group of 70 people, 45 speak Hindi language and 33 speak English language and 10 speak neither Hindi nor English. How many can speak both English as well as Hindi language? How many can speak only English language?

b. Let $A = \{1,2,3\}$, $B = \{3,4\}$, $C = \{4,5,6\}$. Find

- (i) $A \times (B \cap C)$
- (ii) $(A \times B) \cap (A \times C)$
- (iii) $A \times (B \cup C)$
- (iv) $(A \times B) \cup (A \times C)$

(8*2)

Section B

3. Let $P = \{2, 3, 4, 5\}$. Consider the relation R and S on P defined by
 $R = \{(2, 2), (2, 3), (2, 4), (2, 5), (3, 4), (3, 5), (4, 5), (5, 3)\}$
 $S = \{(2, 3), (2, 5), (3, 4), (3, 5), (4, 2), (4, 3), (4, 5), (5, 2), (5, 5)\}$.

Find the matrices of the above relations.

Use matrices to find the following composition of the relation R and S.

- i. $R \circ S$
- ii. $R \circ R$
- iii. $S \circ R$
- iv. $S \circ S$

(4*4)

4. For the given functions f and g, find $((f \circ g)(x))$ and $((g \circ f)(x))$ where the functions are as follow:

- a. $f(x) = 2x + 3$, $g(x) = 3x$
 b. $f(x) = (x+1)/(x-1)$, $g(x) = (x-1)/(x+1)$

(8*2)

Section C

5. a. Prove that $(p \rightarrow r) \rightarrow (q \rightarrow s) = (p \wedge q) \rightarrow (r \vee s)$

b. Check the validity of the argument:

If I work, I cannot study. Either I work or pass mathematics.

I passed mathematics. Therefore, I study.

(8*2)

6. a. Let the universe be Z , the set of integers. Which of the following propositions are equivalent over Z ?

i) $0 < n^2 \leq 4$

ii) $0 < n^3 \leq 8$

iii) $0 < n \leq 2$

b. Over the universe of Books, define the propositions $B(x)$: x has a blue cover, $M(x)$: x has a mathematics book, $U(x)$: x is published in the united states and $R(x,y)$: The bibliography of x includes y .

Translate into words $(\exists x) (M(x) \wedge \sim B(x))$

Express using quantifiers:

- Every book with a blue cover is a mathematics book.
- There are mathematics books that are published outside the United States.
- Not all books have bibliographies.

(8*2)

Section D

7. a) Prove that $A^3 - 4A^2 - 3A + 11I = 0$ if

$$A = \begin{bmatrix} 1 & 3 & 2 \\ 2 & 0 & -1 \\ 1 & 2 & 3 \end{bmatrix}$$

b) Show that the matrix $A = \begin{bmatrix} 1 & 1 & 3 \\ 5 & 2 & 6 \\ -2 & -1 & -2 \end{bmatrix}$ is nilpotent and find its index.

(8*2)

8. Solve the following equation:

$$x + y + z = 6$$

$$x + 2z = 7$$

$$3x + y + z = 12$$

(16)

Paper Code: 4261

Programme	Course Code	Exam Code
Bachelor of Computer Applications	BCAM-4117	117904
Bachelor of Science (Information Technology)	BITM-4117	118004

Semester IV**Course Title: Foundation of Statistical Computing****Time Allowed: 3 Hours****Max Marks: 50**

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 10 marks.

Section – A

1. Explain advantages of R Programming language.
2. Explain the concept of Computational Problem Solving.

Section – B

3. Explain factors and tables in R with examples.
4. Explain Decision Making, Loop and Loop Control Statements in R with Programming examples.

Section – C

5. Write a program script in R to check leap year.
6. Explain input and output functions in R.

Section – D

7. Explain KNN model.
8. Explain graphs along with graph syntax in R.

Exam Code: 118004

Paper Code: 4259

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

Course Title: Object Oriented Programming - II

Course Code: BITL-4113

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. Each question carries 16 marks.

Section A

1. What is a string? Explain different string functions available in Java with a programming example.
2. Write a note on:
 - a. Operators
 - b. Identifiers and Literals

Section B

3. What is an inheritance? Explain different types of inheritance with an example.
4.
 - a. What is a Package? How can the user access one package from another package?
 - b. What is an interface? Compare and contrast class and interface?

Section C

5. What is a thread? Explain the life cycle of a thread? How a thread can be created? Explain with an example.
6. What is exception handling? What is a difference between checked and unchecked exceptions?

Section D

7. Explain file input – output stream functions with a programming example.
8. What is JDBC? Explain JDBC drivers in detail.

(For Reappear Candidates Only (2023-2024))

Exam Code: 118004

Paper Code: 9423

Bachelor of Science (Information Technology) Semester - IV

Course Title: Object Oriented Programming -II

Course Code: BITL-4113

Time Allowed: 3 Hours

Max. Marks: 60

Note: Attempt five questions in all, selecting at least one question from each section. Fifth question may be attempted from any section. Each question carries 12 marks.

Section-A

1. What is a string? Explain different string functions available in Java with a programming example.
2. Write a note on:
 - a. Operators
 - b. Identifiers and Literals

Section-B

3. What is an inheritance? Explain different types of inheritance with an example.
4. a. What is a Package? How can the user access one package from another package?
b. What is an interface? Compare and contrast class and interface?

Section-C

5. What is a thread? Explain the life cycle of a thread? How a thread can be created? Explain with an example.
6. What is exception handling? What is a difference between checked and unchecked exceptions?

Section-D

7. Explain file input – output stream functions with a programming example.
8. What is JDBC? Explain JDBC drivers in detail.

Lib- 17/5/25 (MOR) R.M.V.-1

Exam Code: 118004
(30)

Paper Code: 4260

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

Course Title: E-Business

Course Code: BITL-4114



Time Allowed: 3 Hours

Max Marks: 80

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

SECTION A

1. Differentiate between E-Business and E-Commerce?
Explain the framework of E- Commerce.
2. Explain the various stages involved in opening an E-Commerce store.

SECTION B

3. What is EDI? Explain various components and architecture of EDI systems.
4. What are the factors that contribute to successful EDI Implementation?

SECTION C

5. Explain the three widely used online payment systems for e-commerce.
6. Explain the Legal and Regulatory Framework of E-Commerce.

SECTION D

7. What do you know about Business Process Re-engineering?
8. What is E-Retailing? Explain with the help of case study.