

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-IV : SUMMER : 2026
SUBJECT: ADVANCED JAVA

Day : Monday
Date : 25/05/2026

S-26295-2026

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.:

- 1) Section – I (MCQ) all sub-questions of **Q.No.1** is **COMPULSORY**, write the sub-question no. and the chosen alternative (eg.1-b, 2-c) in the answer book.
- 2) Section – I (MCQ) is of **10** marks.
- 3) Attempt **ANY FIVE** questions from Section – II.. Each question carries 8 marks.
- 4) Attempt **ANY ONE** questions from Section – III. Each question carries 10 marks.
- 5) Answers to Section I, II and III should be written in **SAME** answer book.

SECTION-I

Q. No. 1. MCQs:

[10]

- Q.1** Which of the following is true about the run() method in Java threads? BL1
CO1
a) It must be called directly to start a thread.
b) It contains the code that defines the thread's task.
c) It automatically starts a new thread.
d) It is optional in thread programming.
- Q.2** In Java, which interface must be implemented to define a thread's task? BL1
CO1
a) Runnable
b) Threadable
c) Callable
d) Executor
- Q.3** What is the main advantage of using Generics in Java? BL1
CO2
a) Faster execution
b) Type safety and code reusability
c) Automatic garbage collection
d) Better performance in multithreading
- Q.4** Which of the following is the correct way to declare a generic class? BL1
CO2
a) class Box<T> { }
b) class Box<?> { }
c) class Box<> { }
d) class Box { }

- Q.5 Which method of ServerSocket waits for a client to connect? CO2 BL1
a) connect()
b) accept()
c) listen()
d) bind()
- Q.6 Which method of Socket class returns the input stream to read data from the server? CO2 BL1
a) getOutputStream()
b) getInputStream()
c) read()
d) receive()
- Q.7 JDBC stands for: CO3 BL1
a) Java Database Connectivity
b) Java Data Communication
c) Java Direct Connection
d) Java Database Compiler
- Q.8 Which method of Statement is used to execute INSERT, UPDATE, or DELETE queries? CO3 BL1
a) executeUpdate()
b) executeQuery()
c) execute()
d) update()
- Q.9 Which method of a servlet is called for every client request? CO3 BL1
a) init()
b) service()
c) destroy()
d) main()
- Q.10 JSP stands for: CO3 BL1
a) Java Servlet Page
b) Java Server Page
c) Java Standard Program
d) Java Service Protocol

SECTION – II

Q.2	List and describe the steps to be used in JDBC to access data in an application. Also state various drivers can be used in JDBC; which driver you use and why?	CO2	BL2
Q.3	Why there is need of synchronization in multithreading environment? Describe use of it with suitable example.	CO2	BL4
Q.4	Explain JDBC architecture in detail. Discuss the different types of JDBC drivers and discuss advantages and disadvantages of each.	CO1	BL5
Q.5	What do you know about servlet? Explain servlet lifecycle methods along with comment on type of code to be written in each method.	CO3	BL5
Q.6	Explain the Java Collection Framework with reference to the Collection interface. Compare use of ArrayList and Vector.	CO3	BL4
Q.7	Write Short Notes on (ANT TWO):		
	a) Use of Inter Thread Communication	CO1	BL3
	b) Servlet Container	CO2	BL2
	c) CallableStatement	CO4	BL3
	d) JSP directives	CO3	BL2

SECTION-III

Q.8	Develop a Java code to maintain list of Persons using array list. Also provide code to search/find a person in a list and delete if required. Provide menu-based operations for add, search and delete a person. Here it is expected to design and implement Person class too.	CO2	BL6
Q.9	Apply servlet to check login credentials of a user and check user is exists or not. If user exists then forward request to welcome.jsp page otherwise forward to login.jsp page. On a login page (login.jsp) if credentials in last attempt are wrong then display message "Either user-name and/or password is wrong".	CO4	BL3

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BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-IV : SUMMER : 2026
SUBJECT: ADVANCED HTML WITH JAVA SCRIPT & CSS

Day : Thursday
Date : 28/05/2026

S-26296-2026

Time : 10:00 AM-01:00 PM
Max. Marks : 10

NB :

1. Answers to Section I, II and III should be written in same answer book.
2. Section -I (MCQ) all sub-questions of Q. No. 1 are **COMPULSORY**, write the sub-question no. and the chosen alternative (eg. 1b, 2c) in the answer book.
3. Section-I (MCQ) is of 10 marks and Section-II and onwards are of 50 marks.

SECTION - I

- | | | |
|------|---|-------------|
| Q. 1 | MCQs | CO1 BT1 (1) |
| 1) | Which protocol is used to access web pages on the Internet?
A) FTP
B) HTTP
C) SMTP
D) TCP | CO1 BT1 (1) |
| 2) | Which HTML tag is used for creating a hyperlink?
A) <link>
B) <a>
C) <href>
D) <url> | CO2 BT1 (1) |
| 3) | Which tag is used to define a table row?
A) <td>
B) <tr>
C) <th>
D) <table> | CO2 BT1 (1) |
| 4) | Which attribute specifies the space between table cells?
A) cellpadding
B) cellspacing
C) spacing
D) margin | CO2 BT1 (1) |
| 5) | Which CSS selector is used to select elements by class?
A) #
B) .
C) *
D) @ | CO2 BT2 (1) |
| 6) | Which property is used to set background color in CSS?
A) bgcolor
B) background-color
C) color
D) bg | CO3 BT1 (1) |
| 7) | Which keyword is used to declare a variable in JavaScript?
A) int
B) var
C) define
D) declare | CO4 BT1 (1) |

8) Which loop executes at least once in JavaScript?

- A) for
- B) while
- C) do-while
- D) foreach

CO4 BT1 (1)

9) Which input type is used for password fields?

- A) text
- B) password
- C) hidden
- D) secure

CO5 BT1 (1)

10) Which event occurs when a form is submitted?

- A) onclick
- B) onchange
- C) onsubmit
- D) onload

CO5 BT1 (1)

280526-110101-Kolmogorov

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-IV : SUMMER : 2026
SUBJECT: ADVANCED HTML WITH JAVA SCRIPT & CSS

Day : Thursday
Date : 28/05/2026

S-26296-2026

Time : 10:00 AM-01:00 PM
Max. Marks : **50**

NB :

1. Figures to the right indicate FULL marks.
2. Section – III - Attempt any ONE question. Each questions carries 10 marks.
3. Section – II - Attempt any FIVE questions. Each questions carries 08 marks.

SECTION - II

- | | |
|---|----------------------------|
| Q. 1 Explain the basic structure of an HTML document with example. | CO1 BT6 (8) |
| Q. 2 Explain HTML tables and their attributes. | CO2 BT2 (8) |
| Q. 3 Explain types of CSS with examples. | CO3 BT2 (8) |
| Q. 4 Explain JavaScript functions. | CO4 BT2 (8) |
| Q. 5 Explain HTML forms and their elements. | CO5 BT2 (8) |
| Q. 6 Attempt ANY TWO of the following: (Short Notes)
a) HTML Tags
b) Frames in HTML
c) CSS Selectors | (4x2)
CO1
CO2
CO3 |

SECTION - III

- | | |
|--|--------------|
| Q. 7 Write a JavaScript program to check whether a number is prime or not. | CO4 BT5 (10) |
| Q. 8 Design an HTML form with validation using JavaScript. | CO5 BT6 (10) |

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

B.C.A. Sem-IV : SUMMER : 2026

SUBJECT: OPTIMIZATION TECHNIQUES

Day : Saturday
Date : 30/05/2026

S-26297-2026

Time : 10:00 AM-01:00 PM
Max. Marks : 10

NB :

1. Answers to Section I, II and III should be written in same answer book.
2. Section -I (MCQ) all sub-questions of Q. No. 1 are COMPULSORY, write the sub-question no. and the chosen alternative (eg. 1b, 2c) in the answer book.
3. Section-I (MCQ) is of 10 marks and Section-II and onwards are of 50 marks.

SECTION - I

- Q. 1 MCQs
- 1) Origin of Optimization Techniques is
(a) Operations Research
(b) Linear Algebra
(c) Statistics
(d) Calculus
CO1 BT2 (1)
 - 2) LP formulation requirement is
(a) Linear constraints
(b) Non-linear objective
(c) Integer variables
(d) Dynamic constraints
CO2 (1)
 - 3) Transportation Problem IBFS method is
(a) North West Corner
(b) Maximin Method
(c) Minimax Method
(d) Hungarian Method
CO3 (1)
 - 4) Hungarian method for assignment is
(a) Row reduction
(b) Simplex
(c) Dual
(d) Big M
CO4 (1)
 - 5) CPM uses which time estimates?
(a) Single time
(b) Three time
(c) Probabilistic
(d) Expected
CO5 BT1 (1)
 - 6) Decision making under uncertainty criterion is,
(a) Maximax
(b) Simplex
(c) Hungarian
(d) Vogel's Approximation
CO5 (1)

- 7) Vogel's approximation used in
(a) Transportation
(b) Assignment
(c) LPP
(d) PERT CO4 (1)
- 8) Network critical path?
(a) Longest path
(b) Shortest path
(c) No path
(d) Hardest path CO3 (1)
- 9) MODI method used for
(a) Optimality test
(b) Initial solution
(c) Degeneracy
(d) Balance CO2 BT5 (1)
- 10) The advantage of Decision tree is
(a) Visual representation
(b) Exact solution
(c) Fast computation
(d) All the above CO1 (1)

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BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-IV : SUMMER : 2026
SUBJECT: OPTIMIZATION TECHNIQUES

Day : Saturday
Date : 30/05/2026

S-26297-2026

Time : 10:00 AM-01:00 PM
Max. Marks : 50

Day & Date:

NB :

1. Figures to the right indicate FULL marks.
2. Section – III - Attempt any ONE question. Each questions carries 10 marks.
3. Section – II - Attempt any FIVE questions. Each questions carries 08 marks.

SECTION - II

Q. 2 What are the Optimization Techniques? Explain the applications of Optimization techniques in detail. CO2 BT2 (8)

Q. 3 Solve graphically:
Max $Z = 30X + 40Y$
Subject to: $2X + 1Y \leq 100$
 $X + 2Y \leq 90$
 $X, Y \geq 0$ CO2 BT3 (8)

Q. 4 Find IBFS of the following TP by NWCR and LCM CO3 BT1 (8)

Factories	Destinations			Supply
	D1	D2	D3	
F1	3	1	5	40
F2	6	4	2	60
F3	5	2	4	50
Demand	50	60	40	

Q. 5 Discuss special cases in LPP with suitable examples. CO1 BT2 (8)

Q. 6 Solve the following AP by Hungarian method and find Optimum Solution. CO1 BT3 (8)

	J1	J2	J3	J4
M1	9	7	4	6
M2	6	8	7	5
M3	3	4	9	2
M4	7	9	5	8

Q. 7 Attempt ANY TWO of the following: (Short Answer)

(4x2)

a) Applications of LPP

CO1

b) Decision making under uncertainty criteria

CO5

c) Network Analysis

CO4

SECTION - III

Q. 8 A project has following activities and durations

CO4 BT6 (10)

Activity	1-2	1-3	1-4	2-3	2-5	2-6	3-7
Duration in days	10	4	6	5	12	9	12

Activity	4-5	5-6	6-7	6-8	7-8
Duration in days	15	6	5	4	7

Find earliest time and latest time for each activity, critical path and project duration.

Q. 9 Find the optimum solution for the following TP.

CO2 BT1 (10)

Factory	Warehouses			Supply
	W1	W2	W3	
F1	10	8	12	40
F2	9	11	7	30
F3	13	9	10	30
Demand	30	40	30	

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

B.C.A. Sem-IV : SUMMER : 2026

SUBJECT: COMPUTER NETWORKS

Day : Saturday
Date : 23/05/2026

S-26294-2026

Time : 10:00 AM-01:00 PM

Max. Marks : 10

NB :

1. Answers to Section I, II and III should be written in same answer book.
2. Section -I (MCQ) all sub-questions of Q. No. 1 are COMPULSORY, write the sub-question no. and the chosen alternative (eg. 1b, 2c) in the answer book.
3. Section-I (MCQ) is of 10 marks and Section-II and onwards are of 50 marks.

SECTION - I

- Q. 1 MCQs
- 1) Ring topology connects nodes in: CO1 BT6 (1)
 - A) Straight line
 - B) Circular form
 - C) Random form
 - D) Tree structure
 - 2) Frame Relay is faster than X.25 because it: CO1 (1)
 - A) Uses larger packets
 - B) Has less error checking
 - C) Uses wireless signals
 - D) Uses optical fibers
 - 3) Which of the following is an example of an analog signal? CO1 BT1 (1)
 - A) Computer data
 - B) Digital clock
 - C) Human voice
 - D) Text message
 - 4) Wavelength Division Multiplexing (WDM) is used in: CO2 (1)
 - A) Coaxial cables
 - B) Fiber optic communication
 - C) Microwave communication
 - D) Satellite communication
 - 5) Dynamic routing involves: CO2 (1)
 - A) Pre-configured fixed paths
 - B) Adjusting routes automatically based on network changes
 - C) Using only a single path between nodes

D) Flooding all packets to every node

6) Congestion can be controlled in networks by:

CO2 BT5 (1)

A) Increasing packet size

B) Controlling the sending rate of packets

C) Ignoring network feedback

D) Only using direct routing

7) Which of the following is not a transport service primitive?

CO2 BT4 (1)

A) CONNECT

B) LISTEN

C) SEND

D) ROUTE

8) Digital signatures are mainly used for:

CO3 (1)

A) Message authentication and integrity

B) Increasing bandwidth

C) Reducing latency

D) Data compression

9) Sensor networks are mainly used for:

CO3 (1)

A) Collecting environmental data

B) High-speed video streaming

C) Personal area networking

D) Satellite communication

10) An Intranet is a:

CO1 (1)

A) private network used within an organization

B) public website

C) satellite communication system

D) type of firewall

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BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-IV : SUMMER : 2026
SUBJECT: COMPUTER NETWORKS

Day : Saturday
Date : 23/05/2026

S-26294-2026

Time : 10:00 AM-01:00 PM

Max. Marks : 50

NB :

1. Figures to the right indicate FULL marks.
2. Section – III - Attempt any ONE question. Each questions carries 10 marks.
3. Section – II - Attempt any FIVE questions. Each questions carries 08 marks.

SECTION - II

- Q. 2 What is computer network? Why to define structure of network? Give the difficulties involved in deployment of mesh topology. CO1 BT6 (8)
- Q. 3 What do you mean by Multiplexing? Why is it necessary? Discuss WDM in brief. CO1 BT2 (8)
- Q. 4 What is routing? Discuss the link state routing algorithm with its merits and demerits. CO2 BT2 (8)
- Q. 5 What is Encryption and Decryption? Discuss the symmetric and asymmetric encryption with help of diagrams. CO2 BT2 (8)
- Q. 6 What is sensor network? Why is it required? Explain the components of it. CO3 BT2 (8)
- Q. 7 Attempt ANY TWO of the following: (Short Notes) (4x2)
- a) TCP/IP model CO1 BT6
 - b) Transmission impairments CO1
 - c) SMTP CO3

SECTION - III

- Q. 8 A city government is implementing a smart city project that includes: CO3 BT6 (10)
- Traffic monitoring using sensors
 - Smart street lights
 - Pollution detection systems
 - Real-time emergency communication
- They plan to use 5G networks and wireless sensor networks (WSN).
- Questions:
1. Why is 5G suitable for this system?
 2. How do sensor networks help in data collection?
 3. Explain design issues in sensor networks.

- Q. 9 a) Find the class of the IP address given below with justification. (06)
- 105.105.145.254
192.168.17.192
127.42.127.135

CO2 BT1 (10)

- b) Give the advantages and disadvantages of IPv6 addressing over IPv4 addressing scheme. (04)

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2018 COURSE)
B.C.A. Sem-IV : SUMMER : 2026
SUBJECT: JAVA PROGRAMMING

Day : Wednesday
Date : 10/06/2026

S-18779-2026

Time : 02:00 PM-05:00 PM
Max. Marks : 60

N.B.

- 1) Questions No. 4 from Section - I is **COMPULSORY**.
- 2) Answer **ANY TWO** questions from Q. No. 1, 2, 3 in Section - I.
- 3) Answer **ANY TWO** questions from Q. No. 5, 6, 7 in Section - II.
- 4) Figures to the right indicates **FULL** marks.
- 5) Answer to both the sections should be written in **SAME** answer book.

SECTION - I

- Q. 1** Explain the features of Java. Describe how the JVM and garbage collection contribute to Java's platform independence and memory management. (12)
- Q. 2** What is inheritance? Explain different types of inheritance in Java with suitable examples. (12)
- Q. 3** Explain thread lifecycle with a neat diagram. Write a short program to create a thread using the Runnable interface. (12)
- Q. 4** Write short notes on **ANY THREE** of the following (12)
- a) Wrapper classes
 - b) Exception handling
 - c) Byte streams and character streams
 - d) Applet lifecycle

SECTION- II

- Q. 5** Write a JAVA program to accept an array of 10 integers, calculate and display the average of all elements. (12)
- Q. 6** Write a JAVA program using function overloading to calculate the area of a circle and a rectangle. (12)
- Q. 7** Write a JAVA program to read contents from a text-file and display them on the console using BufferedReader. (12)