

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-III : SUMMER : 2026
SUBJECT: OPERATING SYSTEMS

Day : Saturday
Date : 23/05/2026

S-26286-2026

Time : 02:00 PM-05:00 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) Scheduling is done so as to: (1)
 1. Increase CPU utilization
 2. Decrease CPU utilization
 3. Keep the CPU more idle
 4. Increase process waiting time
 - 2) A file is an _____ data type. (1)
 1. Abstract
 2. Primitive
 3. Public
 4. Private
 - 3) Physical memory is divided into allocation units of the same size are called as _____. (1)
 1. Pages
 2. Page Frames
 3. Blocks
 4. Sectors
 - 4) A page fault occurs when _____. (1)
 1. The Deadlock happens
 2. The Segmentation starts
 3. The page is found in the memory
 4. The page is not found in the memory
 - 5) Deadlock prevention is a set of methods _____. (1)
 1. To ensure that at least one of the necessary conditions cannot hold
 2. To ensure that all of the necessary conditions do not hold
 3. To decide if the requested resources for a process have to be given or not
 4. To recover from a deadlock
 - 6) Malicious programs are also known as.....
 1. Malware
 2. Firmware
 3. Middleware
 4. Hardware

- 7) Mutual exclusion problem occurs..... (1)
1. Among processes that do not shares same resources
 2. Among processes that shares same resources
 3. Between two disjoint processes that do not interact
 4. None of the above
- 8) The first UNIX operating system was written in..... (1)
1. Java
 2. Pascal
 3. Cobol
 4. C
- 9) The number of processes completed per unit time is known as... (1)
1. Turnaround time
 2. Throughput time
 3. Waiting time
 4. Seek time
- 10) The number of resources requested by a process _____ (1)
1. Must always be less than the total number of resources available in the system
 2. Must always be equal to the total number of resources available in the system
 3. Must not exceed the total number of resources available in the system
 4. Must exceed the total number of resources available in the system

230526-e-ion-kon

Day : Saturday

Date : 23/05/2026

S-26286-2026

Time : 02:00 PM-05:00 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 Why operating system is known as resource manager? Explain the concept with help of diagram. (8)
- Q. 3 What is a scheduler? Give the need of it. Discuss different types of schedulers with help of suitable diagram. (8)
- Q. 4 What do mean by Virtual memory? How virtual addresses are mapped into physical addresses? Explain with example. (8)
- Q. 5 What are the problems associated with semaphore? How these problems are resolved in queuing implementation of semaphore? Explain. (8)
- Q. 6 What is a file system? How files are differentiated on the basis of file extensions? List the various File Attributes. (8)
- Q. 7 Attempt ANY TWO of the following: (Short Notes) (4x2)
- a) Virtual machines
 - b) Working Set Model
 - c) Device Drivers

SECTION - III

- Q. 8 Consider the following case. (10)

Processes	In time (am)	Runtime (Min)
P1	10.00	7
P2	10.02	5
P3	10.05	3
P4	10.08	6

Calculate average waiting time and turnaround time in case of:

- a) SJF b) SRTN

Q. 9

Consider the disk having 150 tracks, numbered 1 to 150. Currently head is on track number 50 and moving outside. Following is the queue of requests kept in the FIFO order.

(10)

50, 91, 150, 42, 130, 18, 140, 70, 60

Calculate total time required to move all these tracks using following disk scheduling algorithms. Consider Seek time=0.25 sec.

i) FCFS

ii) SSTF

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230526-e-ion-kolhapur

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)
B.C.A. Sem-III : SUMMER : 2026
SUBJECT: SOFTWARE ENGINEERING

Day : Monday
Date : 25/05/2026

S-26287-2026

Time : 02:00 PM-05:00 PM
Max. Marks : 16

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) Which of the following is *not* a software characteristic? (1)
A. Reliability
B. Usability
C. Volatility
D. Maintainability
 - 2) Which type of feasibility deals with legal, ethical, and regulatory issues? (1)
A. Technical feasibility
B. Operational feasibility
C. Legal feasibility
D. Economic feasibility
 - 3) Which of these is a non-functional requirement? (1)
A. System shall send email notifications
B. System shall allow login via username/password
C. System shall respond within 2 seconds to queries
D. System shall store user data
 - 4) Which of the following is used to represent business rules as condition-action pairs? (1)
A. ER Diagram
B. Decision table
C. DFD
D. Data Dictionary
 - 5) Regression testing is primarily performed to: (1)
A. Test new features
B. Validate individual modules only
C. Ensure changes didn't break existing functionality
D. Test system performance

- 6) The difference between software engineering and programming is that software engineering emphasizes: (1)
- A. Only coding
 - B. Testing only
 - C. Use of engineering principles throughout the life cycle
 - D. User interface design only
- 7) In the Spiral model, the most emphasized activity is: (1)
- A. Coding
 - B. Risk analysis
 - C. Documentation
 - D. Maintenance
- 8) Which of these is a non-functional requirement? (1)
- A. System shall send email notifications
 - B. System shall allow login via username/password
 - C. System shall respond within 2 seconds to queries
 - D. System shall store user data
- 9) Among requirement elicitation techniques, which is a modern technique? (1)
- A. Interview
 - B. Questionnaires
 - C. Observation
 - D. Use cases / user stories
- 10) A good SRS should be: (1)
- A. Ambiguous
 - B. Inconsistent
 - C. Complete
 - D. Redundant

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BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

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

SUBJECT: SOFTWARE ENGINEERING

Day : Monday

Date : 25/05/2026

S-26287-2026

Time : 02:00 PM-05:00 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 Define Software Engineering. Explain the key characteristics of software and discuss the fundamental principles that guide software engineering practices. (8)
- Q. 3 What is a Feasibility Study? Explain the different types of feasibility studies conducted before starting a software project. (8)
- Q. 4 What is Requirement Engineering? Explain any two traditional and any two modern requirement elicitation techniques in detail. (8)
- Q. 5 What is Software Testing? Explain black box testing technique in detail. (8)
- Q. 6 Describe Software Configuration Management process in detail. (8)
- Q. 7 Attempt ANY TWO of the following: (Short Notes) (4x2)
- a) Spiral Model
 - b) Cost Benefit Analysis
 - c) Decision Table

SECTION - III

- Q. 8 For "QuickBite" order process, draw a context level and Level 1 DFD for the process starting from "Customer places order" to "Order delivered and payment confirmed". Assume suitable (10)

process and entities.

Q. 9

A new online bookstore, "BookWorm," needs a system. Customers can browse the book catalog, search for books, add them to a shopping cart, and place orders. They must register and log in. The system checks book availability from the inventory. Upon order confirmation, the system generates an invoice and updates the stock. The management can add new books, update prices, and view sales reports. Draw the Context Level DFD, Level 1 DFD.

(10)

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250526-e-iom-kolhapur

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

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

SUBJECT: STATISTICS

Day : Saturday

Date : 30/05/2026

S-26289-2026

Time : 02:00 PM-05:00 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) Which measure of central tendency cannot be determined always? (1)
 - a. Mean
 - b. Median
 - c. Range
 - d) Mode
- 2) If all data points in a scatter plot fall perfectly on a straight line with a positive slope, what is the value of the correlation coefficient ()? (1)
 - a) $r = -1$
 - b) $= 0$
 - c) $r = +1$
 - d) It can be any value between -1 and +1
- 3) The arithmetic average of the absolute deviations of a series from its mean is called the: (1)
 - a) Coefficient of Mean Deviation
 - b) Mean Deviation
 - c) variance
 - d) Standard Deviation
- 4) A histogram is used to display which type of data? (1)
 - a) Continuous data
 - b) Categorical data
 - c) Discrete data
 - d) Time series data
- 5) The objective of tabulation is to: (1)
 - a) Simplify complex data
 - b) Facilitate statistical analysis
 - c) Present facts in a minimum space
 - d) All of the above
- 6) If mean is 20 and mode is 29 then median for the distribution is – (1)
 - a) 25
 - b) 24

- c) 23
- d) Cannot be determined

- 7) A relationship where the flow of the data points is best represented by a curve is called: (1)
- a) Linear relationship
 - b) Nonlinear relationship
 - c) Linear positive
 - d) Linear negative
- 8) Which of the following is a relative measure of dispersion? (1)
- a) Range
 - b) Standard Deviation
 - c) Coefficient of Variation
 - d) Variance
- 9) Which of the following graphs is best for showing the relationship between two quantitative variables? (1)
- a) Bar chart
 - b) Histogram
 - c) Scatter diagram
 - d) Pie chart
- 10) If $Y = 2 - 0.2X$, then the value of Y intercept is equal to: (1)
- a) -0.2
 - b) 2
 - c) 0.2X
 - d) All of the above

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

Day : Saturday
Date : 30/05/2026

S-26289-2026

Time : 02:00 PM-05:00 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 a) Explain the term correlation and types of correlation that may exist in two variables. (8)
b) What is scatter diagram? Explain its application in correlation analysis.

- Q. 3 a) State and explain types of classes used in statistics while representing data as frequency distribution. (8)
b) Represent following raw data in tabular format using suitable classes and class intervals.

120	149	153	125	169	147	156	168	150	173
145	120	189	148	195	156	158	154	147	165
128	158	193	120	134	157	196	157	143	154
146	163	175	127	157	145	193	136	124	154
135	176	165	128	185	147	142	153	128	142

- Q. 4 Calculate mean deviation and standard deviation for following 10 individual observations. (8)

45	62	58	43	60	54
51	61	57	59	47	42

- Q. 5 From the following data calculate mean median mode (8)

Marks less than	10	20	30	40	50	60
No. of Students	4	10	30	40	47	50

- Q. 6 The scores of two batsmen in 10 matches are given below, find who is more consistent? Who is better run getter? (8)

A : 50,54,45,56,62,54,32,43,32,45

B : 20,100,65,5,10,67,34,43,87,98

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

(4x2)

- Scope of Statistics
- Merits and demerits of median
- Range deviation and coefficient of Range Deviation

SECTION - III

- Q. 8 a. What are regression coefficients? Write formulas to calculate regression coefficients for X on Y and Y on X. (10)
- b. From the following information obtain regression equation of amount demanded on price and estimate the likely demand when price is Rs. 12.5.

Series	Price	Amount Demanded
Arithmetic Mean	10	35
Standard Deviation	2	5
Correlation Coefficient	+0.8	

- Q. 9 c. From the following data for marks awarded by three examiners to 10 students find which two examiners has more correlation while examining students using rank correlation method. (10)

R.No.	1	2	3	4	5	6	7	8	9	10
A	24	29	19	14	30	19	27	30	20	28
B	37	35	16	26	23	27	19	20	16	11
C	30	28	20	25	25	30	20	24	22	29

BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

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

SUBJECT: JAVA PROGRAMMING

Day : Thursday
Date : 28/05/2026

S-26288-2026

Time : 02:00 PM-05:00 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) Which of the following is responsible for converting Java source code into bytecode? (1)
A. JVM
B. JRE
C. javac
D. JIT Compiler
 - 2) Which feature of Java ensures that code can run on any platform without modification? (1)
A. Dynamic Linking
B. Platform Independence
C. Encapsulation
D. Polymorphism
 - 3) Which of the following is NOT a primitive data type in Java? (1)
A. char
B. boolean
C. String
D. int
 - 4) What will be the output of the following code? (1)

```
int x = 10;  
if(x > 5)  
    System.out.println("A");  
else  
    System.out.println("B");
```


A. A
B. B
C. No Output
D. Compilation Error
 - 5) Which of the following correctly defines a constructor in Java? (1)
A. A method with a return type
B. A method with the same name as the class and no return type
C. A static method inside the class
D. A method called explicitly

- 6) Which modifier allows access to members within the same package but not outside? (1)
A. public
B. protected
C. private
D. default
- 7) What is the main advantage of using packages in Java? (1)
A. Speed up compilation
B. Improve GUI performance
C. Organize classes and avoid name conflicts
D. Handle exceptions effectively
- 8) Which of the following statements is true about inheritance in Java? (1)
A. Java supports multiple inheritance using classes
B. Inheritance allows one class to reuse properties of another
C. Private members are directly accessible in the subclass
D. Inheritance is not supported in Java
- 9) Which of the following classes is used to read data from a text file in Java? (1)
A. FileOutputStream
B. FileReader
C. PrintWriter
D. FileWriter
- 10) Which of the following applet lifecycle methods is called only once? (1)
A. start()
B. paint()
C. init()
D. stop()

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BACHELOR OF COMPUTER APPLICATIONS (CBCS - 2022 COURSE)

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

SUBJECT: JAVA PROGRAMMING

Day : Thursday

Date : 28/05/2026

S-26288-2026

Time : 02:00 PM-05:00 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 Explain the features of Java. How is it platform independent? (8)
- Q. 3 Explain different types of control structures in Java with syntax and example. (8)
- Q. 4 What are constructors? Explain types of constructors with example programs. (8)
- Q. 5 Explain the concept of inheritance in Java. List and explain different types of inheritance supported in Java. (8)
- Q. 6 Describe byte and character streams in Java. Give example of using FileReader and FileWriter. (8)
- Q. 7 Attempt ANY TWO of the following: (Short Notes) (4x2)
- a) JVM and Garbage Collection
 - b) Function Overloading.
 - c) Applet Life Cycle.

SECTION - III

- Q. 8 Write a Java program using AWT to create a simple GUI with the following components: (10)
- A Label prompting the user to enter their name.
 - A TextField to accept the user's input.
 - A Button named "Submit".
- When the user clicks the "Submit" button, display the entered name in a TextArea.
- Q. 9 Write a Java program to read a file named "input.txt" and copy its content into another file named "output.txt" using file streams. (10)

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