

Nov-25-02-2504
B.C.A. Sem–III (NEW Course) Examination
November - 2025
BCA-304 Computer Network

Marks :70	Time : 2 ½ Hours
1.(A) Do as directed	06
1. What is LAN and MAN	2. What is Star Topology?
3. What is Full Duplex?	4. What is Local Loop?
5. What is Demultiplexing?	6. What is Digital Signal?
1.(B) Attempt the following (Any Two)	12
1. What is Network? Give Advantages and Disadvantages of Computer Network	
2. Explain OSI Reference Model	
3. Give Difference between FDM V/C TDM	
2.(A) Attempt the following	05
1. What is Transmission Media ?	2. What is guided Media ?
3. What is Twisted pair ?	4. What is Broad band ?
5. Define term : Electromagnetic media	
2.(B) Attempt the following (Any Two)	12
1. Explain the coaxial cable in details	
2. Explain Radio Transmission in Detail	
3. Give Difference between Fibre optics and Copper wire	
3.(A) Do as directed (Any Three)	06
1. Define the term : Adaptive router and Non Adaptive router	
2. Define the term : Active Hub and Remote Bridge	
3. Difference between asynchronous and synchronous protocols	
4. What is BLAST ?	
3.(B) Attempt the following (Any Two)	12
1. Compare X modem v/s Y modem	2. Explain HDLC frames
3. Explain Types of HUB	
4.(A) Attempt the following	05
1. Define the term : IP Address	2. Define the term : Sun netting
3. Define the term : Super netting	4. Give the full form : UDP and TCP
5. Give the full form : RARP and DHCP	
4.(B) Attempt the following (Any Two)	12
1. Explain the IP Address Class in Details	
2. Explain Deference between TCP and UDP Protocol	
3. Explain ICMP in details	

Nov-25-02-2501
B. C.ASem–III (NEW Course) Examination
November - 2025
BCA-301Data Structure

Marks :70

Time : 2 ½ Hours

Q-1[A] Answer the followings.

06

1. Define: Sorting, Searching
2. Explain asymptotic analysis and notation in brief.
3. Explain linear search in brief.

[B] Answer the followings. (Any Two)

12

1. Explain bubble sort technique with example.
2. Explain binary search technique with example.
3. Write an algorithm to sort data using insertion sort.

Q-2[A] Answer the followings.

05

1. What is Data Structure? Define Primitive Data Structure.
2. Write short notes on circular queue.

[B] Answer the followings. (Any Two)

12

1. Write an algorithm for stack operations.
2. What is Queue? Explain queue operations with example.
3. Write an algorithm to convert infix expression to postfix expression.

Q-3[A] Answer the followings.

06

1. Explain doubly linked list in brief.
2. What is circular linked list? Write advantages of circular linked list.
3. List applications of linked list.

[B] Answer the followings. (Any Two)

12

1. Write an algorithm to insert an element into singly linked list.
2. Write an algorithm to create sorted linked list.
3. Write an algorithm to remove an element from doubly linked list.

Q-4[A] Answer the followings.

05

1. Binary Tree
2. Adjacent node
3. Graph
4. AVL Tree
5. Undirected Graph

[B] Answer the followings. (Any Two)

12

1. Explain the process of converting General tree into Binary tree with example
2. Explain DFS algorithm with example
3. Write an algorithm for Tree traversal technique

Nov-25-02-2503
B.C.A. Sem–III (NEW Course) Examination
November - 2025
BCA-303 Operating System

Marks :70

Time : 2 ½ Hours

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| 1.(A) Attempt the following | 06 |
| 1. Discuss Components of OS | |
| 2. Differentiate multiprogramming v/s multitasking | |
| 3. Discuss Buffering | |
| 1.(B) Attempt the following (Any Two) | 12 |
| 1. Explain Services of Operating System | |
| 2. Explain Batch OS in detail | |
| 3. Explain Real-time OS in detail | |
| 2.(A) Attempt the following | 05 |
| 1. Discuss types of scheduler | |
| 2. Define Throughput Time, Waiting Time | |
| 3. Define Deadlock | |
| 2.(B) Attempt the following (Any Two) | 12 |
| 1. Explain various states of process in brief | |
| 2. Explain round robin scheduling with example | |
| 3. Explain PCB in detail | |
| 3.(A) Attempt the following | 06 |
| 1. Define static v/s dynamic memory | |
| 2. Define: MMU, Swapping | |
| 3. Define Page fault and how to replace page | |
| 3.(B) Attempt the following (Any Two) | 12 |
| 1. What is Paging ? Explain Demand Paging | |
| 2. Explain dynamic Partitioning in brief | |
| 3. Explain Internal and External fragmentation with example | |
| 4.(A) Attempt the following | 05 |
| 1. Define : rmdir and mv commands | |
| 2. Define File Users and File Permissions | |
| 3. Define use of Cat command with example | |
| 4.(B) Attempt the following (Any Two) | 12 |
| 1. Explain Architecture of UNIX kernel | |
| 2. Explain Directory structure of UNIX | |
| 3. Explain features of UNIX in brief | |

Nov-25-02-2493
B.C.A Sem–III (NEP Course) Examination
November - 2025
Computer Network - MS23MDCBCA-303

Marks : 50

Time : 2½ Hours

Q.1. Answer the following. (Any Two) **10**

1. Explain the TCP/IP reference model and its layers.
2. Explain the OSI Reference Model in detail.
3. What is network topology? Explain different types with advantages and disadvantages.

Q.2. Answer the following. (Any Two) **10**

1. Compare Guided and Unguided Transmission Media.
2. Explain Coaxial Cable with its structure, advantages and disadvantages.
3. Explain Radio Wave Transmission.

Q.3. Attempt the following. (Any Two) **10**

1. What are Network Connectivity Devices ? Explain their importance.
2. What is a Switch ? Explain different types of switches.
3. What are Asynchronous Protocols ? Explain with examples.

Q.4. Attempt the following. (Any Two) **10**

1. What is the Network Layer in the Internet ? Explain its main functions.
2. Explain the different classes of IP addresses in IPv4.
3. Differentiate between TCP and UDP.

Q.5. Do as Directed. (Any Five) **10**

1. Definitions of Network and Computer Network.
2. Definition: Computer Communication and Transmission Media.
3. Difference between FDM and TDM.
4. What is a Gateway ?
5. What are the types of Twisted Pair Cable ?
6. Full form ICMP, ARP, RARP, BOOTP, and DHCP.

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Nov-25-02-2496
B.C.A. Sem–III (NEP Course) Examination
November - 2025
Computer Security - I – MS23SECBCA-306
Marks : 25 **Time : 2 Hours**

Q-1 Attempt any two.

10

1. Discuss in detail the concept of computer criminals. Elaborate on at least three major categories and their motives behind committing crimes.
2. *“Humans are the first line of defense in security.”* Justify this statement by explaining the role of people as security tools in an organization.
3. Justify the statement *“Prevention is always better than cure”* in the context of computer security by explaining various defense strategies against cyber-attacks.

Q-2 Attempt any two.

10

1. Support the statement *“IDS works passively, whereas IPS works actively”* by explaining the working and functions of IDS and IPS in detail.
2. Discuss the methods used by intruders, including phishing, brute force attacks, social engineering, and SQL injection.
3. *“Every click can be a threat in the digital world.”* Justify this statement by explaining what malicious software is and describing various types of malware such as viruses, worms, Trojans, ransomware, and spyware.

Q-3 Attempt any two

05

1. Write short notes on CIA.
 2. Differentiate: Virus vs. Worm.
 3. List out five advantages of Firewall.
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Nov-25-02-2496
B.C.A. Sem–III (NEP Course) Examination
November - 2025
Computer Security - I – MS23SECBCA-306
Marks : 25 **Time : 2 Hours**

Q-1 Attempt any two.

10

1. Discuss in detail the concept of computer criminals. Elaborate on at least three major categories and their motives behind committing crimes.
2. *“Humans are the first line of defense in security.”* Justify this statement by explaining the role of people as security tools in an organization.
3. Justify the statement *“Prevention is always better than cure”* in the context of computer security by explaining various defense strategies against cyber-attacks.

Q-2 Attempt any two.

10

1. Support the statement *“IDS works passively, whereas IPS works actively”* by explaining the working and functions of IDS and IPS in detail.
2. Discuss the methods used by intruders, including phishing, brute force attacks, social engineering, and SQL injection.
3. *“Every click can be a threat in the digital world.”* Justify this statement by explaining what malicious software is and describing various types of malware such as viruses, worms, Trojans, ransomware, and spyware.

Q-3 Attempt any two

05

1. Write short notes on CIA.
 2. Differentiate: Virus vs. Worm.
 3. List out five advantages of Firewall.
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Nov-25-02-2491
B. C.A Sem–III (NEP Course) Examination
November - 2025
Data Structure – MS23MJDSCBCA-301

Marks : 50

Time : 2¹/₂ Hours

- Q-1 Answer the followings. (Any Two) 10**
1. Write an algorithm to sort data using selection sort.
 2. Sort the following data using shell sort.
88, 85, 65, 77, 21, 43, 69, 51
 3. What is searching? Write an algorithm for binary search technique.
- Q-2 Answer the followings. (Any Two) 10**
1. What is Stack? Write applications of Stack.
 2. Explain circular queue operations in detail with example.
 3. What is Data structure? Explain non-primitive data structure in detail.
- Q-3 Answer the followings. (Any Two) 10**
1. Write an algorithm to insert an element into Singly Linked list.
 2. Write an algorithm to create a sorted linked list.
 3. Write short notes on doubly linked list? Also write Applications of linked list.
- Q-4 Answer the followings. (Any Two) 10**
1. Write an algorithm for Tree traversal techniques.
 2. Explain BFS algorithm with suitable example.
 3. Write an algorithm to insert an element into Binary Search tree.
- Q-5 Answer the followings. (Any Five) 10**
1. What is collision? List methods to resolve collision.
 2. What is Hashing? List hashing functions.
 3. Write short notes on circular linked list.
 4. Convert into Postfix Expression: $(a + b) * (c - d) / e / (f + g)$
 5. Define: Binary tree, Leaf node
 6. Define: Directed Graph, Adjacent node

Nov-25-02-2494
B.C.A Sem–III (NEP Course) Examination
November - 2025
Environmental Science - MS23AECBCA -304
Marks : 25 **Time : 2 Hours**

- Q. 1 Attempt the following. (Any Two)** **10**
1. Explain the scope of environmental studies.
 2. Describe the basic concept of population and community ecology.
 3. What are food chains and food webs?
- Q. 2 Attempt the following. (Any Two)** **10**
1. What are the causes and effects of air pollution?
 2. What is the difference between renewable and non-renewable resources?
 3. What are the causes and effects of air pollution ?
- Q. 3 Attempt the following.** **05**
1. Define: ecology
 2. What is global warming ?
 3. Why are environment studies important ?
 4. What is solid waste management ?
 5. What is noise pollution ?
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Nov-25-02-2494
B.C.A Sem–III (NEP Course) Examination
November - 2025
Environmental Science - MS23AECBCA -304
Marks : 25 **Time : 2 Hours**

- Q. 1 Attempt the following. (Any Two)** **10**
4. Explain the scope of environmental studies.
 5. Describe the basic concept of population and community ecology.
 6. What are food chains and food webs?
- Q. 2 Attempt the following. (Any Two)** **10**
4. What are the causes and effects of air pollution?
 5. What is the difference between renewable and non-renewable resources?
 6. What are the causes and effects of air pollution ?
- Q. 3 Attempt the following.** **05**
6. Define: ecology
 7. What is global warming ?
 8. Why are environment studies important ?
 9. What is solid waste management ?
 10. What is noise pollution ?
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Nov-25-02-2494
B.C.A. Sem–III (NEP Course) Examination
November - 2025
Health Education - MS23VACBCA-305
Marks : 25 **Time : 2 Hours**

- Q.1 Attempt the following. (Any Two)** **10**
1. Describe the role of physical education teacher in promoting school health.
 2. Describe the concept of health and health education.
 3. Summarize the health effects of smoking on the body.
- Q.2 Attempt the following. (Any Two)** **10**
1. Describe two health effects of water pollution.
 2. What are the primary symptoms of diabetes ?
 3. What are the primary goals of community health ?
- Q.3 Attempt the following.** **05**
1. Define: positive health
 2. What is health according to the WHO ?
 3. Name one health effect of smoking.
 4. How is smallpox transmitted ?
 5. FULL FORM: PHC
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Nov-25-02-2494
B.C.A. Sem–III (NEP Course) Examination
November - 2025
Health Education - MS23VACBCA-305
Marks : 25 **Time : 2 Hours**

- Q.1 Attempt the following. (Any Two)** **10**
1. Describe the role of physical education teacher in promoting school health.
 2. Describe the concept of health and health education.
 3. Summarize the health effects of smoking on the body.
- Q.2 Attempt the following. (Any Two)** **10**
1. Describe two health effects of water pollution.
 2. What are the primary symptoms of diabetes ?
 3. What are the primary goals of community health ?
- Q.3 Attempt the following.** **05**
1. Define: positive health
 2. What is health according to the WHO ?
 3. Name one health effect of smoking.
 4. How is smallpox transmitted ?
 5. FULL FORM: PHC
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Nov-25-02-2491
B.C.A. Sem–III (NEP Course) Examination
November - 2025

Relational Database Management System-MS23MJDSCBCA-301A

Marks : 50

Time : 2½ Hours

Q.1 Attempt the following. (Any Two) **10**

1. What is Concurrency ? Explain three concurrency problem.
2. Discuss the concept of deadlock with an example.
3. Describe the concept of Media Recovery.

Q.2 Attempt the following. (Any Two) **10**

1. What are Joins in SQL? Explain the different types of joins.
2. Use a suitable example to demonstrate aggregate functions.
3. What is Constraint ? Explain with Example.

Q.3 Attempt the following. (Any Two) **10**

1. Explain the structure of a PL/SQL Block with an example.
2. What are Cursors in PL/SQL? Explain explicit cursor in detail.
3. What is Error Handling in PL/SQL? Explain the types of errors.

Q.4 Attempt the following. (Any Two) **10**

1. Explain the concept of a View. How is a view created ?
2. Describe Procedure in PL/SQL.
3. What is a Sequence in SQL? Explain how it is created.

Q.5 Attempt the following. **10**

1. What does ACID stand for in transaction management?
2. What is a shared lock?
3. List out Set Operators.
4. What does DDL stand for in SQL?
5. What is the purpose of the WHERE clause in SQL?
6. Name any two string functions in SQL.
7. What is the use of the GROUP BY clause?
8. What is the use of the SQL%ROWCOUNT attribute in PL/SQL?
9. What is the purpose of the NEXTVAL function in a sequence?
10. Which command is used to remove a view from the database?
