

International University of Business and Technology

1. What is multiplexing and demultiplexing?
2. Explain Java exception handling methods with examples.
3. Write a simple inheritance program in C++ or Java.
4. Draw an ER Diagram involving Student, Enrollment, Courses, and Results.
5. Write short notes on:
 - a. Internal Fragmentation
 - b. Runtime Error
6. What is data cleaning? Explain with an example.
7. What is MIS (Management Information System) and DSS (Decision Support System)?
8. Draw a DFA for a given Regular Expression.
9. Write short notes on:
 - a. transform() vs. fit_transform()
 - b. IPv4 vs. IPv6
 - c. RISC vs. CISC
10. Differentiate between Application and Transport Layers, and Logical vs. Physical Addressing.
11. Why is Requirement Engineering important?
12. Explain the Binary Search algorithm.
13. What is overfitting and bias in AI? Explain reinforcement learning with an example.
14. Analyze the following C code:

```
unsigned char c;
for(c=0; c!=250; c++) {}
```
15. Analyze the output of the following program. (Code given)
16. What is a platform-based business model in e-commerce?
17. Draw and explain the memory hierarchy in Computer Organization.
18. List and explain different types of semiconductors.

World University of Bangladesh

1. How does amortized analysis help determine time complexity in dynamic data structures like heaps and hash tables?
2. When the halting problem makes termination undecidable, what methods can be used to ensure or analyze program termination?
3. How do traffic shaping and resource reservation enhance Quality of Service (QoS) in IP networks?
4. How does cache memory improve CPU performance by reducing cache misses?
5. You are tasked with designing a data architecture for a system that handles massive unstructured data. Which would you choose and why:
 - a. Relational (SQL)
 - b. NoSQL
6. What motivated you to choose a career in academia? Why do you want to work at this university?
7. What are the limitations of supervised learning, and how can reinforcement learning address them?
8. For a complex game involving multiple objects, which paradigm is more suitable: Explain your choice.
 - a. Object-Oriented Programming
 - b. Structured Programming?
9. Compare Agile and Waterfall software development models. What are the advantages of Agile?

Stamford University of Bangladesh

Written:

1. Simplify and solve the given Boolean function using a Karnaugh Map (K-Map).
2. Explain the K-means clustering algorithm with a suitable example.
3. Write a Java or C++ program that demonstrates inheritance.
4. Solve the given programming problem using C/C++. (*Custom scenario provided*)

Viva:

1. Explain the ACID properties in Database Management Systems.
2. What is pipelining in microprocessors? Explain with an example.
3. What are design patterns in Object-Oriented Programming? Why are they important?
4. Why do we use Database Management Systems instead of file systems?

Green University of Bangladesh

1. Analyze the following code and identify which data structure or algorithm (such as sorting) can be applied to make it efficient. Explain your reasoning.
2. Solve the following problem using C/C++ and write the complete code.
(Custom scenario was provided)
3. Explain overfitting, underfitting, and another type of fitting (possibly best fitting). Draw diagrams to support your explanation.
4. Given the subnet 223.1.1.0/24, calculate:
 - o Network ID
 - o Number of total and usable hosts
 - o IP address range
 - o Subnet mask
 - o Class
 - o Broadcast address
 - o Number of network and host bits
 - o IP version
5. [Possibly] A compiler design question was asked.
6. [Possibly] A question from Advanced Operating Systems was included.
7. Define and explain the key properties of object-oriented programming such as inheritance and encapsulation.
8. What will be the output of the following C program? (Code was provided)
9. Explain the phases of the Software Development Life Cycle (SDLC).
10. A cryptographic algorithm is used to encrypt large data. Explain how this encryption algorithm works and its application. (Detailed scenario was given)
11. Answer a question from data structures (e.g., stack, queue, or tree). (Exact question unknown)

BJIT (Under National University)

1. Write SQL queries to:
 - a. Select employees working at a specific bank.
 - b. Update salary for employees in a specific department.
 - c. Delete employee records based on their city.
 - d. Count the number of employees in each company.
2. Write a C/C++ program using nested loops to print the following pattern:
 - a. (Pattern was given in question)
3. Explain the operations of a Dequeue (Double-Ended Queue) with examples.
4. Evaluate the following postfix expression: $6\ 4\ 3\ 2\ +\ -\ *$
5. Differentiate between binary and linear data structures with examples.
6. Answer the following short questions:
 - a. What is the difference between symmetric and asymmetric encryption?
 - b. What is a firewall?
 - c. What is a VPN?
 - d. What is DNS?
 - e. What is a digital signature?
7. Analyze the output of the following Java code snippet: (Code involving array and System.out.println was given)

Sonargaon University

1. Construct a binary search tree using the given list of numbers. Show the structure.
2. Write a program to solve the following problem. (Possibly related to checking prime numbers)
3. Explain the differences between supervised, unsupervised, and reinforcement learning. Give examples for each.
4. What is an operating system? Mention its major functions. (Theory-based)
5. Write SQL queries to perform JOIN operations between two or more tables based on a given schema.
6. Subnetting question: Given an IP address and subnet mask, calculate the network ID, broadcast address, and usable IP range.