Public Service Commission (Lok Sewa Aayog)
Rastriya Banijya Bank Limited 2083/7/13

Open Competitive Written Examination | Senior Assistant (Information Technology) | Key: [D]
Subject: Information Technology and Management, Banking and Organizational Management

Question 1: A view of database that appears to an application program is known as .....

A) Schema
B) Subschema
C) Virtual table
D) Internal level

✓ Correct Answer: B) Subschema

Reason / Technical Explanation: In database management systems (DBMS), a subschema defines the portion of the database that is visible and accessible to a specific application program or user view. While 'Schema' defines the entire logical database structure, 'Subschema' (or external schema) tailored specifically for application programs.

Question 2: ..... enforces the parent record cannot be deleted when child record exists.

A) Data integrity
B) Domain integrity
C) Referential integrity
D) Security

✓ Correct Answer: C) Referential integrity

Reason / Technical Explanation: Referential integrity is a database constraint that ensures relationships between tables remain consistent. It prevents users from deleting or changing parent records if dependent child records exist (foreign key constraint).

Question 3: What is the main purpose of indexing in a database?

A) To remove duplicate records
B) To manage database backups
C) To increase the size of the database
D) To improve the speed of data retrieval

✓ Correct Answer: D) To improve the speed of data retrieval

Reason / Technical Explanation: Database indexing creates a data structure (e.g., B-Tree) that allows the database engine to locate and retrieve specific records rapidly without performing a full table scan.

Question 4: In HTTP, ... is used to submit form data securely without appending it to the URL.

A) GET
B) PUT
C) POST
D) HEAD

✓ Correct Answer: C) POST

Reason / Technical Explanation: The HTTP POST method sends data inside the request message body rather than in the URL query string (unlike GET), making it appropriate and secure for submitting sensitive form data.

Question 5: ..... is a common data warehousing technique for handling large scale aggregation quickly.

A) Foreign keys
B) Materialized views
C) Normalization
D) Triggers

✓ Correct Answer: B) Materialized views

Reason / Technical Explanation: A Materialized View pre-computes and physically stores the query result set (such as complex joins and large-scale aggregations) on disk, enabling extremely fast response times for data warehouse analytical queries.

Question 6: Which of the following is a preemptive scheduling algorithm?

A) Round Robin
B) Repetitive First
C) Batch Processing
D) First Come First Serve

✓ Correct Answer: A) Round Robin

Reason / Technical Explanation: Round Robin (RR) CPU scheduling is preemptive because each process is assigned a fixed time slice (quantum) and is forcibly interrupted/preempted when its time quantum expires to let the next process run.

Question 7: A deadlock in an operating system occurs when .....

A) a process completes execution unsuccessfully
B) two or more processes are waiting indefinitely for resources held by each other
C) the CPU is idle
D) memory is defragmented

✓ **Correct Answer: B) two or more processes are waiting indefinitely for resources held by each other**

Reason / Technical Explanation: Deadlock is a state in which two or more processes are unable to proceed because each is waiting for a resource held by another process in a circular dependency chain.

Question 8: The time for the disk arm to move the heads to the cylinder containing the desired sector is called ..... time.

A) Disk
B) Seek
C) Arm
D) Sector

✓ **Correct Answer: B) Seek**

Reason / Technical Explanation: Seek time is the duration required for a magnetic hard disk drive's read/write head assembly (disk arm) to move to the specific track/cylinder containing the target data sector.

Question 9: Which command is used to setup hard disk?

A) loadfix
B) expand
C) share
D) fdisk

✓ **Correct Answer: D) fdisk**

Reason / Technical Explanation: The `fdisk` command line utility is used in DOS and disk management tools to partition and initialize hard disk drives.

Question 10: Which of the following is commonly associated with UNIX operating system?

A) Primarily designed for gaming
B) Strong command-line interface and multiuser support
C) Primarily designed for graphical user interface
D) Used mainly for document processing

✓ **Correct Answer: B) Strong command-line interface and multiuser support**

Reason / Technical Explanation: UNIX is renowned for its powerful shell environment (command line interface), robust multi-user capability, and strong multi-tasking architecture.

Question 11: Which of the following commands is used to display the contents of a folder or directory

in DOS?

A) Disp

B) Show

C) DIR

D) View

✓ Correct Answer: C) DIR

Reason / Technical Explanation: In Disk Operating System (DOS), the `DIR` command displays a list of files and subdirectories contained within the current or specified directory.

Question 12: Copy-on-write is primarily used to optimize .....

A) network packet transfer

B) disk management

C) process creation via fork

D) file management

✓ Correct Answer: C) process creation via fork

Reason / Technical Explanation: Copy-on-Write (COW) optimizes system performance during the `fork()` system call by allowing parent and child processes to share the same physical memory pages until one of them modifies a page, at which point a copy is created.

Question 13: A system state is 'safe' in the Banker's Algorithm if .....

A) all processes can complete without deadlock

B) all resources are currently free

C) there is 100% CPU utilization

D) no process is in waiting condition

✓ Correct Answer: A) all processes can complete without deadlock

Reason / Technical Explanation: In the Banker's Algorithm for deadlock avoidance, a state is considered 'safe' if there exists at least one sequence of process execution (a safe sequence) where every process can obtain required resources and finish without causing a deadlock.

Question 14: The fundamental building block of an analog computer is the .....

A) Transistor Switch (logic)

B) Operational Amplifier (Op-Amp)

C) Magnetic Core Memory

D) Integrated Circuit Microprocessor

✓ **Correct Answer: B) Operational Amplifier (Op-Amp)**

Reason / Technical Explanation: Operational Amplifiers (Op-Amps) serve as the core building block of analog computers because they perform continuous mathematical operations (addition, integration, differentiation, multiplication) on voltage signals.

Question 15: Which computer is best suited for weather forecasting, climate modeling?

A) Desktop Computer
B) Mini Computer
C) Mainframe Computer
D) Supercomputer

✓ **Correct Answer: D) Supercomputer**

Reason / Technical Explanation: Supercomputers process complex mathematical calculations at extreme speeds (petaflops/exaflops), which is essential for weather forecasting, climate simulation, and scientific modeling.

Question 16: What does BCC mean in email?

A) Blind Carbon Copy
B) Basic Carbon Copy
C) Backup Carbon Copy
D) Binary Carbon Copy

✓ **Correct Answer: A) Blind Carbon Copy**

Reason / Technical Explanation: BCC stands for Blind Carbon Copy. Recipients specified in the BCC field receive a copy of the email without their addresses being visible to other recipients.

Question 17: Which HTML tag is used to create a hyperlink on a web page?

A) <img>
B) <href>
C) <a>
D) <src>

✓ **Correct Answer: C) <a>**

Reason / Technical Explanation: The HTML `<a>` (anchor) tag, along with its `href` attribute, is used to create hyperlinked connections to other web pages or documents.

Question 18: Which protocol is commonly used for browsing websites securely?

A) HTTP

B) FTP
C) HTTPS
D) SMTP

✓ **Correct Answer: C) HTTPS**

Reason / Technical Explanation: HTTPS (Hypertext Transfer Protocol Secure) encrypts website communications using TLS/SSL protocols to secure data transfer between browser and web server.

Question 19: Which of the following is a physical security measure controlling voltage fluctuation?

A) Surge Protection Device
B) AC Voltage
C) Biometrics
D) Ammeter

✓ **Correct Answer: A) Surge Protection Device**

Reason / Technical Explanation: A Surge Protection Device (SPD) protects sensitive electrical and IT infrastructure by limiting voltage spikes and surges.

Question 20: Reinforcement learning is based on .....

A) labeled images
B) rewards and penalties
C) statistical sampling
D) compression

✓ **Correct Answer: B) rewards and penalties**

Reason / Technical Explanation: Reinforcement learning is an AI paradigm where an agent learns to make decisions by taking actions in an environment to maximize cumulative rewards and minimize penalties.

Question 21: Which of the following requires participants to solve computationally difficult problems in blockchain?

A) Difficulty Level
B) Block Level Computation
C) Consensus Mechanism
D) Authentication

✓ **Correct Answer: C) Consensus Mechanism**

Reason / Technical Explanation: Proof-of-Work (PoW), a fundamental consensus mechanism in blockchain, requires network miners to solve computationally intensive mathematical hashing puzzles to validate transactions and

produce new blocks.

Question 22: Which register holds the address of the next instruction to be executed?

A) IR
B) MAR
C) AC
D) PC

✓ Correct Answer: D) PC

Reason / Technical Explanation: The Program Counter (PC) register stores the memory address of the next sequential instruction queued for execution by the CPU.

Question 23: Which of the following is the secondary memory?

A) Register
B) Hard Disk
C) RAM
D) Cache

✓ Correct Answer: B) Hard Disk

Reason / Technical Explanation: Hard Disk drives provide non-volatile secondary storage for permanent data persistence. Registers, RAM, and Cache are volatile primary/internal memory components.

Question 24: A CPU has a 3GHz clock frequency. Which statement is the most accurate?

A) The CPU generates approximately 3 billion clock cycles per second
B) The CPU executes exactly 3 billion instructions every second
C) Each instruction necessarily requires exactly one clock cycle
D) The CPU can process exactly 3 billion bytes of data per second

✓ Correct Answer: A) The CPU generates approximately 3 billion clock cycles per second

Reason / Technical Explanation: A clock speed of 3 GHz (Gigahertz) means the CPU's internal clock generator ticks at approximately 3 billion cycles per second (3×10^9 Hz).

Question 25: The purpose of spindle in Hard Disk is .....

A) to read files
B) to write files
C) to rotate platter
D) to point address

✓ **Correct Answer: C) to rotate platter**

Reason / Technical Explanation: The spindle motor in a hard drive holds the magnetic platters together and rotates them at fixed high speeds (e.g., 5400 RPM or 7200 RPM).

Question 26: Which CPU architecture uses separate memory and buses for instruction and data?

A) Von Neumann Architecture
B) Harvard Architecture
C) CISC Architecture
D) RISC Architecture

✓ **Correct Answer: B) Harvard Architecture**

Reason / Technical Explanation: Harvard architecture physically separates storage and signal pathways for instructions and data, allowing simultaneous instruction fetch and data access.

Question 27: What is the primary function of the Control Unit?

A) Perform arithmetic calculations
B) Direct and coordinate CPU operations
C) Store permanent data
D) Display output

✓ **Correct Answer: B) Direct and coordinate CPU operations**

Reason / Technical Explanation: The Control Unit (CU) acts as the brain of the CPU, decoding instructions and directing flow of data and execution signals across memory, ALU, and I/O components.

Question 28: Which I/O technique allows a device to notify the CPU when it requires attention?

A) Polling
B) Caching
C) Spooling
D) Interrupt driven I/O

✓ **Correct Answer: D) Interrupt driven I/O**

Reason / Technical Explanation: In Interrupt-driven I/O, external hardware devices trigger a hardware interrupt signal to alert the CPU immediately when an I/O event requires servicing.

Question 29: The method of accessing the I/O devices by repeatedly checking the status flags is .....

A) Program controlled I/O

B) Memory mapped I/O
C) I/O mapped
D) DMA

✓ **Correct Answer: A) Program controlled I/O**

Reason / Technical Explanation: Program-controlled I/O (also known as Polling) continuously checks hardware status flags in a loop until the device becomes ready.

Question 30: Which device broadcasts incoming data to all connected ports?

A) Hub
B) Router
C) Switch
D) Bridge

✓ **Correct Answer: A) Hub**

Reason / Technical Explanation: A network Hub operates at Layer 1 (Physical) and blindly retransmits/broadcasts incoming data packets out to all connected ports.

Question 31: In a multiple computer LAN, which of the following devices is used to ensure that data is forwarded only to the port associated with the destination device, rather than being broadcasted to all connected devices?

A) Router
B) Hub
C) Repeater
D) Switch

✓ **Correct Answer: D) Switch**

Reason / Technical Explanation: A network Switch operates at Layer 2 (Data Link) and inspects destination MAC addresses to forward frame traffic specifically to the single target port.

Question 32: Which of the following is used by the internet?

A) Circuit switching
B) Packet switching
C) No switching
D) Internet switching

✓ **Correct Answer: B) Packet switching**

Reason / Technical Explanation: The Internet relies on Packet Switching (TCP/IP), where data is broken down into

discrete packets, routed independently over the network, and reassembled at the destination.

Question 33: Which of the following techniques holds capability to detect and correct errors in transmitted data over network?

A) Parity Check
B) Checksum
C) Dual Code
D) Hamming Code

✓ Correct Answer: D) Hamming Code

Reason / Technical Explanation: Hamming Code is an error-correcting code capable of both detecting and correcting single-bit errors in transmitted binary data.

Question 34: Which of the following protocols converts domain name into IP address?

A) DHCP
B) ARP
C) DNS
D) ICMP

✓ Correct Answer: C) DNS

Reason / Technical Explanation: DNS (Domain Name System) translates human-readable domain names (e.g., example.com) into numerical IP addresses.

Question 35: Which protocol is used to map an IPv4 address to the corresponding MAC address on a local network?

A) ARP
B) DNS
C) DHCP
D) ICMP

✓ Correct Answer: A) ARP

Reason / Technical Explanation: ARP (Address Resolution Protocol) resolves a known logical IP address to a physical hardware MAC address on a local area network.

Question 36: Which notation represents an IPv4 network using CIDR?

A) 192.168.1.0/24
B) 192.168.1.0:24

C) 192.168.1.0-24

D) 192.168.1.0\24

✓ Correct Answer: A) 192.168.1.0/24

Reason / Technical Explanation: Classless Inter-Domain Routing (CIDR) notation appends a slash (`/`) followed by the network prefix bit length (e.g., `/24`) to the IP address.

Question 37: Which of the following is an example of symmetric encryption?

A) RSA

B) AES

C) ECC

D) DSA

✓ Correct Answer: B) AES

Reason / Technical Explanation: AES (Advanced Encryption Standard) is a symmetric-key encryption algorithm that uses the same shared secret key for encryption and decryption. RSA, ECC, and DSA are asymmetric.

Question 38: Which of the following security devices is appropriate to control incoming and outgoing network traffic based on predefined security policy such as source/destination IP address and ports?

A) Hub

B) Repeater

C) Firewall

D) DNS Server

✓ Correct Answer: C) Firewall

Reason / Technical Explanation: A Firewall monitors and filters incoming and outgoing network traffic according to predefined security rules based on IP addresses, ports, and protocols.

Question 39: Social engineering attacks primarily exploit .....

A) software bugs

B) hardware failures

C) network bandwidth limits

D) human psychology and trust

✓ Correct Answer: D) human psychology and trust

Reason / Technical Explanation: Social engineering relies on manipulating human psychology, trust, and cognitive vulnerabilities rather than exploiting technological system bugs.

Question 40: What is the security risk of "Tailgating" in premise?

A) An employee leaving computer screen unlocked while going out of desk

B) An attacker sending thousands of spam emails to company

C) Stealing PIN/Password of a person by looking from back side of a user

D) An unauthorized person following an authorized employee to enter the gate without any checking

✓ Correct Answer: D) An unauthorized person following an authorized employee to enter the gate without any checking

Reason / Technical Explanation: Tailgating (or piggybacking) occurs when an unauthorized individual gains physical access to a restricted facility by closely following an authorized person through a physical door or barrier.

Question 41: An email looks same like it is from your bank asking you to click a link and reset your login password immediately. What type of attack is this?

A) Spyware

B) Phishing

C) Pharming

D) Email Spoofing

✓ Correct Answer: B) Phishing

Reason / Technical Explanation: Phishing is a fraudulent attempt to lure victims into providing sensitive credentials by impersonating trustworthy entities (like banks) via deceptive emails.

Question 42: Authentication in cybersecurity refers to .....

A) granting permissions after identity is verified

B) verifying the identity of a user

C) encrypting data

D) auditing the usage of the system

✓ Correct Answer: B) verifying the identity of a user

Reason / Technical Explanation: Authentication is the process of verifying that an individual or entity is who they claim to be. (Granting permissions after authentication is 'Authorization').

Question 43: What is the vision of Nepal's National ICT Policy, 2072?

A) To transform Nepal into an information and knowledge-based society and economy

B) To promote ICT for the productivity of the sectors which are key drivers of the national economy

C) To develop ICT sector as a key driver of Nepal's sustainable development and poverty reduction

D) To empower and facilitate Nepal's participation in the global ICT forum

✓ **Correct Answer: A) To transform Nepal into an information and knowledge-based society and economy**

Reason / Technical Explanation: The primary overall vision stated in Nepal's National ICT Policy, 2072 (2015) is: "To transform Nepal into an information and knowledge-based society and economy."

Question 44: According to the IT Guidelines issued by NRB, how often should a bank's Board-approved IT policy be reviewed at a minimum?

A) Every 1 year
B) Every 2 years
C) Every 3 years
D) Every 4 years

✓ **Correct Answer: A) Every 1 year**

Reason / Technical Explanation: Nepal Rastra Bank (NRB) IT Guidelines mandate that commercial banks and financial institutions review their Board-approved IT policy periodically, at least annually (Every 1 year), to address evolving technical and cyber risks.

Question 45: Which of the following is not a Two Factor Authentication (2FA)?

A) PIN and Biometric
B) Card and PIN
C) Password and PIN
D) Card and Biometric

✓ **Correct Answer: C) Password and PIN**

Reason / Technical Explanation: 2FA requires two distinct factors from: 1) What you know (Password/PIN), 2) What you have (Card/Token), 3) What you are (Biometric). Both 'Password' and 'PIN' fall into the same single factor category ('What you know'), so combining them does NOT constitute 2FA.

Question 46: In an application vulnerable to SQL injection, what is the primary purpose of appending a payload containing 'OR '1' = 1 to an input field?

A) Alter database
B) To make a conditional statement always evaluated to true, thereby bypassing authentication logic
C) To escalate to administrator privileges
D) To delete a database table

✓ **Correct Answer: B) To make a conditional statement always evaluated to true, thereby bypassing authentication logic**

Reason / Technical Explanation: The SQL fragment `' OR '1'='1` forces the boolean logic of a database SQL query to evaluate to true regardless of input, bypassing login authentication checks.

Question 47: Which type of server acts as an intermediary between a client and the internet?

A) Web Server
B) DNS Server
C) Database Server
D) Proxy Server

✓ Correct Answer: D) Proxy Server

Reason / Technical Explanation: A Proxy Server acts as an intermediary gateway between local client endpoints and external internet servers to provide security, privacy, and caching.

Question 48: In which OSI layer does Proxy Server operate?

A) Layer 4
B) Layer 5
C) Layer 6
D) Layer 7

✓ Correct Answer: D) Layer 7

Reason / Technical Explanation: Application-level proxy servers evaluate application protocols (such as HTTP/HTTPS) and operate at Layer 7 (Application Layer) of the OSI model.

Question 49: ..... are used when the multiple rows of a table are to be processed.

A) Cursors
B) Triggers
C) Procedures
D) Functions

✓ Correct Answer: A) Cursors

Reason / Technical Explanation: In database programming (SQL/PL-SQL), a Cursor is a database object used to iterate through and process multiple query result rows sequentially line-by-line.

Question 50: Which of the following is used to control the presentation/styling of a web page?

A) XML
B) HTML
C) CSS
D) UML

✓ Correct Answer: C) CSS

Reason / Technical Explanation: CSS (Cascading Style Sheets) controls the visual presentation, styling, layout, fonts, and colors of web pages, whereas HTML structures the content.