Public Service Commission (Lok Sewa Aayog)
Rastriya Banijya Bank Limited

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

Question 1: 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 memory storage and signal buses for instructions and data. This allows the CPU to fetch an instruction and perform data memory reads/writes simultaneously, unlike the Von Neumann architecture which shares a single memory and bus.

Question 2: 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 central processor. It fetches instructions from memory, decodes them, and directs the flow of execution signals across the ALU, registers, and other system components.

Question 3: 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, an external hardware device sends an interrupt signal directly to the CPU whenever it is ready to transfer data or requires attention, allowing the CPU to execute other tasks in the meantime.

Question 4: 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 (often called Polling) involves the CPU continually querying/checking hardware status registers in a loop until the device indicates it is ready for data transfer.

Question 5: 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 Layer) of the OSI model and retransmits (broadcasts) any packet received on one port out to every other connected port, regardless of the target destination.

Question 6: 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 Layer). It learns destination hardware (MAC) addresses and selectively forwards frames directly to the intended destination port instead of broadcasting them.

Question 7: 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 is built on Packet Switching (TCP/IP network model), where data streams are broken down into discrete packets that are routed independently across network nodes and reassembled at the destination.

Question 8: 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 linear code capable of detecting up to two-bit errors and automatically correcting single-bit errors in transmitted binary data.

Question 9: 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) maps human-readable domain names (e.g., example.com) into numerical IP addresses (e.g., 192.0.2.1) required for networking.

Question 10: 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 an IPv4 address into its physical hardware (MAC) address within a local area network segment.

Question 11: 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) uses a slash (`/`) followed by the prefix length integer to specify the routing prefix mask for an IP network.

Question 12: 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 cipher, meaning it uses the exact same cryptographic key for both encryption and decryption. RSA, ECC, and DSA are asymmetric.

Question 13: 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 acts as a security barrier that inspects incoming and outgoing traffic rules based on IP addresses, protocol types, and port numbers to block unauthorized network access.

Question 14: 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 psychological manipulation, deception, and exploiting human trust to trick users into revealing confidential information or granting unauthorized access.

Question 15: 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 person gains physical entrance to a secured building by walking closely behind an authorized employee through a door or security barrier.

Question 16: 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 cyber attack where attackers impersonate trustworthy entities (like banks) via fraudulent emails to trick victims into revealing sensitive personal credentials or login details.

Question 17: 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 verification process that confirms the identity of a user, system, or process (e.g., via password, OTP, biometric). Granting rights after verification is called Authorization.

Question 18: 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 vision explicitly declared in Nepal's National Information and Communication Technology (ICT) Policy, 2072 (2015) is: 'To transform Nepal into an information and knowledge-based society and economy.'

Question 19: 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 specify that commercial banks and financial institutions must review their Board-approved IT policy at least once every year (annually) to adapt to changing technology and risk profiles.

Question 20: 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: Two-Factor Authentication requires factors from two distinct authentication categories: 1) What you know (Password/PIN), 2) What you have (Card/Token), and 3) What you are (Biometrics). Both Password and PIN belong to 'What you know', so combining them is single-factor (2-step), not 2FA.

Question 21: 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 payload `' OR '1'='1` forces the SQL query's `WHERE` clause to evaluate to `true` under all conditions, rendering password validation ineffective and bypassing authentication.

Question 22: 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 intermediate gateway server sitting between internal client requests and external internet destinations, providing security filtering, privacy, and caching.

Question 23: 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 inspect and process high-level application protocols such as HTTP/HTTPS, placing them at Layer 7 (Application Layer) of the OSI model.

Question 24: ..... 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 systems (PL/SQL), a Cursor is a pointer used to traverse, evaluate, and process individual records line-by-line when a query returns multiple rows.

Question 25: 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) specifies the visual styling, layout, formatting, colors, and font rules of web content defined in HTML.

Question 26: 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: A Subschema (external schema) represents the restricted portion or user view of a database that is specifically made accessible to a given application program.

Question 27: ..... 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 maintains consistent relational dependencies across database tables by preventing the deletion or modification of parent records that have linked child records.

Question 28: 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 indices build lookup index trees (e.g. B-Trees) to rapidly locate and fetch

requested data records without executing inefficient full-table scans.

Question 29: 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 request method packages form payload data inside the request body rather than attaching it visibly as parameter strings in the URL.

Question 30: ..... 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: Materialized views pre-calculate and physically persist complex aggregation data on disk, allowing fast querying on massive datasets in analytical data warehouses.

Question 31: 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 as it allocates a fixed CPU time slot (time quantum) to each process and interrupts it when its time slice expires.

Question 32: 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 an operating system failure condition where two or more processes are permanently blocked because each is holding a resource that the other requires.

Question 33: 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 latency required for a mechanical hard drive read/write head assembly to position itself over the designated track/cylinder.

Question 34: 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` disk partition utility is used in DOS/operating systems to manipulate partition tables and initialize hard drives.

Question 35: 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 architecture is historically characterized by its powerful Command Line Interface (CLI) shell environments and native multi-user/multitasking kernel capabilities.

Question 36: 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 DOS, the `DIR` command displays the directory structure and lists files and subdirectories located inside the active folder.

Question 37: 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 memory utilization during `fork()` operations by letting parent and child processes temporarily share physical memory pages until one writes data.

Question 38: 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 Banker's Algorithm, a safe state implies that there exists at least one valid execution sequence (safe sequence) in which all processes can obtain required allocations and finish execution without deadlock.

Question 39: 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) are the basic building blocks of analog

computation, performing continuous mathematical operations (addition, integration, scaling) on voltage signals.

Question 40: 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 ultra-complex floating-point computations at petascale/exascale speeds, making them uniquely equipped for climate simulations and weather forecasting.

Question 41: 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. Recipient addresses added to the BCC field receive copies of the email without being displayed to other recipients.

Question 42: 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 Anchor tag `<a>` along with its `href` attribute defines hyperlinked paths between web pages and external resources.

Question 43: 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 HTTP browser-server communication using TLS/SSL cryptographic protocols.

Question 44: 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 computer equipment from dangerous voltage spikes and electrical surges.

Question 45: 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 a machine learning framework where an autonomous agent learns optimal actions by receiving cumulative rewards for correct decisions and penalties for errors.

Question 46: 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: Blockchain Consensus Mechanisms (like Proof-of-Work) mandate that network nodes/miners solve computationally demanding mathematical cryptographic puzzles to validate blocks.

Question 47: 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 48: 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: A Hard Disk provides persistent non-volatile secondary storage. CPU Registers, RAM, and Cache memory function as primary volatile memory.

Question 49: 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 frequency of 3 GHz (Gigahertz) indicates that the internal CPU clock pulse ticks approximately 3 billion times (3×10^9 cycles) per second.

Question 50: 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 in a hard drive is the central motor shaft that holds and rotates magnetic drive platters at high rotational speeds (e.g., 5400 RPM / 7200 RPM).