Lecturer Computer Science (BS-17) — 2017 · Solved Past Paper

Body: Punjab Public Service Commission (PPSC) · **Post:** Lecturer Computer Science (BS-17) · **Year:** 2017 · **Questions:** 100 in the original paper — **99 solved and verified**, 1 excluded as defective (Q84) · **Price:** Free

> **How to use this paper:** each question shows the stem, the four options, and the correct answer. Click “Why each option?” under a question to see all four options explained — one question teaches four topics. General Knowledge answers are as of the 2017 sitting.

Source note: Atif Pedia full keyed reproduction, 'PPSC Lecturer Computer Science Solved Past Papers 2017' (100 questions numbered 1-100, 94 with a printed tick key; accessed 9 Nov 2026). No built paper of this sitting exists. 9 printed-key corrections (Q26, Q28, Q29, Q32, Q47, Q61, Q70, Q96, Q100). 1 PICK-ONE (Q25) and 1 DEFECTIVE-excluded (Q84), decided by the assistant under the owner's 8 Nov 2026 delegation. Answers verified independently against reference facts, worked derivations and targeted sources, never from the printed key alone.

Question 1 Computer Science

Which module gives control of the CPU to the process selected by the short-term scheduler?

- A. Dispatcher ✓ **Correct answer**
- B. Interrupt
- C. Scheduler
- D. None of these

A. The dispatcher gives the CPU to the process chosen by the short-term scheduler.

pt signals an event, it does not hand over the CPU to a chosen process.

C. The scheduler selects the process, the dispatcher performs the handover.

D. The dispatcher does this, so 'None of these' is wrong.

Question 2 Computer Science

The processes that are residing In main memory for execution are kept on a list called:

- A. Job queue
- B. Ready queue ✓ **Correct answer**
- C. Execution queue
- D. Process queue

A. The job queue holds processes waiting for memory, not those in memory.

B. Processes in main memory ready to run wait on the ready queue.

C. There is no standard 'execution queue' for resident processes.

D. A process queue is a generic term, not the ready list.

Question 3 Computer Science

The Interval from the time of submission of a process to the time of completion Is termedas:

- A. Waiting time
- B. Turnaround time ✓ **Correct answer**
- C. Response time
- D. Throughput

A. Waiting time is only the time spent in the ready queue.

B. Turnaround time runs from submission to completion.

time is submission to first response, not to completion.

D. Throughput is jobs completed per unit time.

Question 4 Computer Science

Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?

- A. First-come first-served scheduling ✓ **Correct answer**
- B. Shortest job scheduling
- C. Priority scheduling
- D. None of these

A. FCFS gives the CPU to the earliest requester.

B. Shortest-job picks the shortest burst, not the earliest arrival.

C. Priority scheduling picks the highest priority, not the earliest arrival.

D. FCFS does this, so 'None of these' is wrong.

Question 5 Computer Science

In priority scheduling algorithm:

- A. CPU is allocated to the process with highest priority ✓ **Correct answer**
- B. CPU is allocated to the process with lowest priority
- C. Equal priority processes cannot be scheduled
- D. None of these

A. Priority scheduling gives the CPU to the highest-priority process.

B. The lowest-priority process waits, it is not chosen first.

C. Equal-priority processes are scheduled, usually FCFS among them.

st-priority rule is correct, so 'None of these' is wrong.

Question 6 Computer Science

In priority scheduling algorithm, when a process arrives at the ready queue, its priority Is compared with the priority of:

- A. Ail process
- B. Currently running process ✓ **Correct answer**
- C. Parent process
- D. Init process

A. There is no 'all process' comparison in priority scheduling.

B. A new arrival is compared with the currently running process for preemption.

C. The parent process has no role in this comparison.

D. The init process has no role in this comparison.

Question 7 Computer Science

Time quantum is defined In:

- A. Shortest job scheduling algorithm
- B. Round robin scheduling algorithm ✓ **Correct answer**
- C. Priority scheduling algorithm
- D. Multilevel queue scheduling algorithm

A. Shortest-job scheduling uses burst length, not a time quantum.

B. Round robin gives each process a fixed time quantum.

C. Priority scheduling uses priorities, not a time quantum.

D. Multilevel queue scheduling does not define the time quantum.

8 Computer Science

In multilevel feedback scheduling algorithm;

- A. A process can move to a different classified ready queue ✓ **Correct answer**
- B. Classification of ready queue is permanent
- C. Processes are not classified into groups
- D. None of the mentioned

A. In multilevel feedback scheduling a process can move between queues.

B. Queue classification is not permanent, that is the point of feedback.

C. Processes are classified into groups in this algorithm.

D. Moving between queues is a real feature, so this is wrong.

Question 9 Computer Science

Which one of the following cannot be scheduled by the kernel?

- A. Kernel level thread
- B. User level thread ✓ **Correct answer**
- C. Process
- D. None of these

A. Kernel-level threads are scheduled by the kernel.

B. User-level threads are scheduled by the thread library, not the kernel.

C. Processes are scheduled by the kernel.

D. User-level threads are the exception, so this is wrong.

Question 10 Computer Science

A process refers to 5 pages, A, B, C, D, E in the order: A, B, C, D, A, B, E, A, B, C, D, E. If the

ement algorithm is FIFO, the number of page transfers with an empty Internal store of 3 frames Is:

- A. 8
- B. 10
- C. 9 ✓ **Correct answer**
- D. 7

A. FIFO gives 9 faults, not 8.

B. FIFO gives 9 faults, not 10.

C. FIFO with 3 frames faults on A, B, C, D, A, B, E, C, D, nine faults in all.

D. FIFO gives 9 faults, not 7.

Note: Note: No printed key in the reproduction; answer worked by FIFO simulation. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 11 Computer Science

A memory page containing a heavily used variable that was Initialized very early and Is in constant use Is remove and then the page replacement algorithm used is:

- A. LRU
- B. LFU
- C. FIFO ✓ **Correct answer**
- D. None of these

A. LRU keeps heavily used pages, it would not remove this one.

B. LFU keeps frequently used pages, it would not remove this one.

C. FIFO removes the oldest page regardless of use, so this early, busy page is removed.

D. FIFO does this, so 'None of these' is wrong.

12 Computer Science

Users are_____ that their processes are running on a paged system.

- A. Aware
- B. Unaware ✓ **Correct answer**
- C. Informed
- D. None of these

A. Users are not aware of paging, the system hides it.

B. Paging is transparent, users do not know their processes run on a paged system.

C. Users are not informed about paging.

D. Users are unaware, so this is wrong.

Question 13 Computer Science

The aim of creating page replacement algorithms is to:

- A. Replace pages faster
- B. Increase the page fault rate
- C. Decrease the page fault rate ✓ **Correct answer**
- D. To allocate multiple pages to processes

A. Speed of replacement is not the aim.

B. The aim is to lower the fault rate, not raise it.

C. Page replacement algorithms exist to decrease the page fault rate.

D. Allocating several pages at once is not the aim.

Question 14 Computer Science

A FIFO replacement algorithm associates with each page the .

e it was brought into memory ✓ **Correct answer**

- B. Size of the page in memory
- C. Page after and before It
- D. All of these

A. FIFO records the time each page was brought into memory.

B. FIFO does not use page size.

C. FIFO does not track neighbouring pages.

D. Only the load time is recorded, so this is wrong.

Question 15 Computer Science

Optimal page - replacement algorithm Is:

- A. Replace the page that has not been used for a long lime
- B. Replace the page that has been used for a long time
- C. Replace the page that will not be used for a long time ✓ **Correct answer**
- D. None of these

A. Replacing the long-unused page is LRU, not optimal.

B. Replacing the long-used page is not the optimal rule.

C. Optimal replacement removes the page that will not be used for the longest time.

D. The longest-future-use rule is correct, so this is wrong.

Question 16 Computer Science

Optimal page - replacement algorithm Is difficult to implement, because:

- A. It requires a lot of Information
- B. It requires future knowledge of the reference string ✓ **Correct answer**
- C. It Is too complex

extremely expensive

A. Information volume is not the obstacle.

B. Optimal replacement needs future knowledge of the reference string, which is unavailable.

C. Complexity is not the reason it cannot be implemented.

D. Cost is not the reason it cannot be implemented.

Question 17 Computer Science

LRU page - replacement algorithm associates with each page the .

- A. Time it was brought into memory
- B. The time of that page s last use ✓ **Correct answer**
- C. Page after and before It
- D. All of these

A. Load time is the FIFO association, not LRU.

B. LRU associates each page with the time of its last use.

C. LRU does not track neighbouring pages.

D. Only the last-use time is associated, so this is wrong.

Question 18 Computer Science

For 3 page frames, the following Is the reference string: 701 20 30 4 2 3032120 17 0 1; How many page faults does the LRU page replacement algorithm produce?

- A. 10
- B. 15
- C. 11
- D. 12 ✓ **Correct answer**

12 faults, not 10.

B. LRU gives 12 faults, not 15.

C. LRU gives 12 faults, not 11.

D. LRU with 3 frames faults 12 times on this reference string.

Note: Note: No printed key in the reproduction; the garbled string reads 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1, the classic example, and LRU with 3 frames gives 12 faults. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 19 Computer Science

CPU fetches the Instruction from memory according to the value of:

- A. Program counter ✓ **Correct answer**
- B. Status register
- C. Instruction register
- D. Program status word

A. The CPU fetches the next instruction at the address in the program counter.

B. The status register holds flags, not the next instruction address.

C. The instruction register holds the current instruction, not the next address.

D. The program status word holds status, not the next instruction address.

Question 20 Computer Science

A memory buffer used to accommodate a spood differential is called:

- A. Slack pointer
- B. Cache ✓ **Correct answer**
- C. Accumulator
- D. Disk buffer

inter is not a speed-matching buffer.

B. A cache holds data to bridge a speed difference between units.

C. An accumulator holds arithmetic results, not a speed buffer.

D. A disk buffer is specific to disks, the general term is cache.

Question 21 Computer Science

Which one of the following Is the address generated by CPU?

- A. Physical address
- B. Absolute address
- C. Logical address ✓ **Correct answer**
- D. None of these

A. The physical address is produced by address translation, not by the CPU directly.

B. An absolute address is a loaded physical address, not the CPU-generated one.

C. The CPU generates the logical (virtual) address.

D. The logical address is generated by the CPU, so this is wrong.

Question 22 Computer Science

Run time mapping from virtual to physical address Is done by:

- A. Memory management unit ✓ **Correct answer**
- B. CPU
- C. PCI
- D. None of these

A. The memory management unit maps virtual addresses to physical ones at run time.

B. The CPU generates the virtual address, the MMU translates it.

is, it does not map addresses.

D. The MMU does this, so this is wrong.

Question 23 Computer Science

Memory management technique In which system stores and retrieves data from secondary storage for use In main memory Is called:

- A. Fragmentation
- B. Paging ✓ **Correct answer**
- C. Mapping
- D. None of these

A. Fragmentation is wasted space, not secondary-storage transfer.

B. Paging moves data between secondary storage and main memory.

C. Mapping is address translation, not the storage transfer technique.

D. Paging is the technique, so this is wrong.

Question 24 Computer Science

The Interrupt-request line Is a part of the:

- A. Data line
- B. Control line ✓ **Correct answer**
- C. Address line
- D. None of these

A. The interrupt-request line carries control information, not data.

B. The interrupt-request line is part of the control lines.

C. The address lines carry addresses, not interrupt requests.

trol line, so this is wrong.

Question 25 Computer Science

The return address from the Interrupt-service routine Is stored on the:

- A. System heap
- B. Processor register
- C. Processor slack
- D. Memory ✓ **Correct answer**

A. The return address is not kept on the system heap.

B. A processor register may hold it briefly, but the saved return address goes to the stack.

C. There is no 'processor slack' storage.

D. The return address is saved on the stack, which is in memory, the only offered place.

Note: Note: PICK-ONE: the precise answer is the stack, which is not offered; the stack lives in memory, so D is the only option covering it. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 26 Computer Science

The signal sent to the device from the processor to the device after receiving an Interrupt Is:

- A. Interrupt-acknowledge ✓ **Correct answer**
- B. Return signal
- C. Service signal
- D. Permission signal

A. After an interrupt the processor sends an interrupt-acknowledge signal to the device.

B. There is no 'return signal' in interrupt handling.

signal is not the name of the processor-to-device signal.

D. There is no 'permission signal' in interrupt handling.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys C (Service signal); the processor sends an interrupt-acknowledge signal to the device. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 27 Computer Science

A relational database consists of a collection of:

- A. Tables ✓ **Correct answer**
- B. Fields
- C. Records
- D. Keys

A. A relational database is a collection of tables.

B. Fields are columns inside tables, not the database itself.

C. Records are rows inside tables, not the database itself.

D. Keys identify rows, they are not the database itself.

Question 28 Computer Science

A _____ In a table represents a relationship among a set of values.

- A. Column
- B. Key
- C. Row ✓ **Correct answer**
- D. Entry

A. A column is one attribute, not a relationship among values.

B. A key identifies a row, it is not the relationship itself.

ple) represents a relationship among a set of values.

D. An entry is a single value, not a relationship among values.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys A (Column); a row (tuple) represents a relationship among a set of values. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 29 Computer Science

The term_____Is used to refer to a row.

- A. Attribute
- B. Tuple ✓ **Correct answer**
- C. Field
- D. Instance

A. An attribute is a column, not a row.

B. A tuple is the term for a row of a table.

C. A field is a column, not a row.

D. An instance is a row in a different sense, but tuple is the standard term.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys C (Field); the term for a row is tuple, while field is a column. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 30 Computer Science

The term attribute refers to a_____of a table.

- A. Record
- B. Column ✓ **Correct answer**
- C. Tuple

A. A record is a row, not an attribute.

B. An attribute is a column of a table.

C. A tuple is a row, not an attribute.

D. A key identifies rows, it is not an attribute.

Question 31 Computer Science

For each attribute of a relation, there Is a set of permitted values, called the_____ofthat attribute.

- A. Domain ✓ **Correct answer**
- B. Relation
- C. Set
- D. Schema

A. The permitted values of an attribute form its domain.

B. A relation is the whole table, not the value set.

C. A set is a generic collection, domain is the specific term.

D. A schema is the structure of the relation, not the value set.

Question 32 Computer Science

Which of the following Is a tuple-generating dependency?

- A. Functional dependency
- B. Equality-generating dependencies
- C. Multi-valued dependencies ✓ **Correct answer**
- D. Non-functlonal dependency

al dependency is equality-generating, not tuple-generating.

B. Equality-generating dependencies include functional dependencies.

C. Multi-valued dependencies are tuple-generating dependencies.

D. There is no standard 'non-functional dependency' of this kind.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys A (Functional dependency); functional dependencies are equality-generating, while multi-valued dependencies are tuple-generating. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 33 Computer Science

The main task carried out in the _____Is to remove repeating attributes to separate tables.

- A. First Normal Form ✓ **Correct answer**
- B. Second Normal Form
- C. Third Normal Form
- D. Fourth Normal Form

A. First normal form removes repeating groups and attributes into separate tables.

B. Second normal form removes partial dependencies, not repeating attributes.

C. Third normal form removes transitive dependencies.

D. Fourth normal form concerns multi-valued dependencies.

Question 34 Computer Science

Which of the normal form Is based on multivalued dependencies?

- A. First
- B. Second
- C. Third

rth ✓ **Correct answer**

A. First normal form is about atomic values, not multi-valued dependencies.

B. Second normal form is about partial dependencies.

C. Third normal form is about transitive dependencies.

D. Fourth normal form is based on multi-valued dependencies.

Question 35 Computer Science

Which forms has a relation that possesses data about an Individual entity?

- A. 2NF
- B. 3NF
- C. 4NF ✓ **Correct answer**
- D. 5NF

A. 2NF still permits multi-valued redundancy.

B. 3NF still permits multi-valued redundancy.

C. A relation in 4NF holds data about an individual entity with no non-trivial multi-valued dependencies.

D. 5NF concerns join dependencies, not this case.

Note: Note: Stem loosely worded in the reproduction; 4NF is the keyed form for a relation holding data about a single entity without multi-valued redundancy. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 36 Computer Science

Which of the following has each related entity set has Its own schema and there Is an additional schema for the relationship set?

any-to-many relationship set ✓ **Correct answer**

- B. A multi-valued attribute of an entity set
- C. A one-to-many relationship set
- D. Both A and B

A. A many-to-many relationship set gets its own schema plus the entity schemas.

B. A multi-valued attribute gets a schema of attribute plus key, not an extra relationship schema.

C. A one-to-many relationship needs no separate schema.

D. Only the many-to-many case needs the extra schema.

Question 37 Computer Science

in which of the following, a separate schema Is created consisting of that attribute and the primary key of the entity set?

- A. A many-to-many relationship set
- B. A multi-valued attribute of an entity set ✓ **Correct answer**
- C. A one-to-many relationship set
- D. Both A and B

A. A many-to-many set needs a full relationship schema, not this form.

B. A multi-valued attribute gets a separate schema of the attribute and the entity primary key.

C. A one-to-many set needs no separate schema.

D. Only the multi-valued attribute case takes this form.

Question 38 Computer Science

In 2NF:

- functional dependencies (FDs) exist
- B. No mufti-valued dependencies (MVDs) exist.
- C. No partial FDs exist. ✓ **Correct answer**
- D. No partial MVDs exist.

A. 2NF still allows functional dependencies.

B. 2NF still allows multi-valued dependencies.

C. In 2NF no partial functional dependencies exist.

D. Partial multi-valued dependencies are not the 2NF condition.

Question 39 Computer Science

_____ can help us detect poor E-R design,

- A. Database Design Process
- B. E-R Design Process
- C. Relational scheme
- D. Functional dependencies ✓ **Correct answer**

A. The design process as a whole does not detect poor E-R design by itself.

B. The E-R design process creates the design, it does not detect its faults.

C. A relational scheme is the output, not the detector.

D. Functional dependencies reveal poor E-R design.

Question 40 Computer Science

Build & Fix Model Is suitable for programming exercises of_____LOC (Line of Code).

- A. 100-200 ✓ **Correct answer**
- B. 200-400

-1000

- D. Above 1000

A. Build and Fix suits small programs of about 100-200 lines of code.

B. 200-400 lines is beyond the Build and Fix range.

C. 400-1000 lines needs a structured model, not Build and Fix.

D. Above 1000 lines needs a full life-cycle model.

Note: Note: No printed key in the reproduction; the standard textbook range for Build and Fix is 100-200 lines of code. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 41 Computer Science

What Is the best way to represent the attributes In a large database?

- A. Relational-and ✓ **Correct answer**
- B. Concatenation
- C. Dot representation
- D. All of these

A. Attributes in a large database are best represented relationally, as tables.

B. Concatenation joins strings, it does not represent attributes.

C. Dot representation is not a database representation.

D. Only the relational representation is correct.

Note: Note: Option A is truncated in the reproduction ('Relational-and'); it is the relational representation. Decided by the assistant under the owner's 8 Nov 2026 delegation.

42 Computer Science

Designers use which of the following to tune performance of systems to support time-critical operations?

- A. Demoralization ✓ **Correct answer**
- B. Redundant optimization
- C. Optimization
- D. Realization

A. Denormalization tunes database performance for time-critical operations.

B. Redundant optimization is not the standard term.

C. Optimization is too general, denormalization is the specific technique.

D. Realization is not a performance-tuning technique.

Note: Note: Option A is misprinted as 'Demoralization'; it is Denormalization, the performance-tuning technique for time-critical operations. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 43 Computer Science

RAD stands for:

- A. Relative Application Development
- B. Rapid Application Development ✓ **Correct answer**
- C. Rapid Application Document
- D. Rational Application Document

A. RAD is not 'Relative Application Development'.

B. RAD stands for Rapid Application Development.

C. RAD is not 'Rapid Application Document'.

t 'Rational Application Document'.

Question 44 Computer Science

Which one of the following models Is not suitable for accommodating any change?

- A. Build & Fix Model
- B. Prototyping Model
- C. RAD Model
- D. Waterfall Model ✓ **Correct answer**

A. Build and Fix accepts change easily, it has almost no structure.

B. Prototyping is built to accommodate change.

C. RAD is built to accommodate change.

D. The waterfall model is rigid and not suitable for accommodating change.

Question 45 Computer Science

Which one of the following Is not a phase of Prototyping Model?

- A. Quick Design
- B. Coding ✓ **Correct answer**
- C. Prototype Refinement
- D. Engineer Product

A. Quick Design is a prototyping phase.

B. Coding is not a named phase of the prototyping model.

C. Prototype Refinement is a prototyping phase.

D. Engineer Product is a prototyping phase.

46 Computer Science

RAD Model has:

- A. 2 Phase
- B. 3 phase
- C. 5 phases ✓ **Correct answer**
- D. 6 phases

A. RAD has more than 2 phases.

B. RAD has more than 3 phases.

C. RAD has 5 phases: business, data and process modelling, application generation, testing and turnover.

D. RAD has 5 phases, not 6.

Question 47 Computer Science

What Is the major drawback of using RAD Model?

- A. Highly specialized & skilled developers / designers are required. ✓ **Correct answer**
- B. Increases re-usablllty of components
- C. Encourages customer/cllent feedback
- D. Both A & C

A. Needing highly specialised developers is a real drawback of RAD.

B. Reusability is an advantage of RAD, not a drawback.

C. Encouraging customer feedback is an advantage of RAD, not a drawback.

D. Only A is a drawback, so 'both A and C' is wrong.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys D (Both A and C); customer

an advantage of RAD, not a drawback, so only A is a drawback. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 48 Computer Science

SDLC stands for:

- A. Software Development Life Cycle ✓ **Correct answer**
- B. System Development Life cycle
- C. Software Design Life Cycle
- D. System Design Life Cycle

A. SDLC stands for Software Development Life Cycle.

B. System Development Life Cycle is not the standard expansion.

C. Software Design Life Cycle is not the standard expansion.

D. System Design Life Cycle is not the standard expansion.

Question 49 Computer Science

Which model can be selected If user is Involved In all the phases of SDLC?

- A. Waterfall Model
- B. Prototyping Model
- C. RAD Model ✓ **Correct answer**
- D. Both 8 & C

A. Waterfall involves the user mainly at the start, not all phases.

B. Prototyping involves the user, but RAD is the model keyed to full-phase involvement.

C. In RAD the user is involved in all phases of the SDLC.

D. Prototyping is not the model keyed to involvement in all phases.

50 Computer Science

Two devices are In network If:

- A. A process In one device Is able to exchange Information with a process in another device ✓ **Correct answer**
- B. A process Is running on both devices
- C. Plus of the processes running of different devices are same
- D. None of these

A. Two devices are in a network if a process on one can exchange information with a process on the other.

B. Merely running a process on both devices is not networking.

C. The processes need not be the same.

D. Exchange of information is the condition, so this is wrong.

Question 51 Computer Science

In computer network nodes are:

- A. The computer that originates the data
- B. The computer that routes the data
- C. The computer that terminates the data
- D. All of these ✓ **Correct answer**

A. A node can originate data.

B. A node can route data.

C. A node can terminate data.

D. Nodes do all of these, so all three are true.

52 Computer Science

Communication channel Is shared by all the machines on the network In:

- A. Broadcast network ✓ **Correct answer**
- B. Unl-cast network
- C. Multi-cast network
- D. None of these

A. In a broadcast network the channel is shared by all machines.

B. A unicast network sends to one machine only.

C. A multicast network sends to a group, not all machines.

D. The broadcast network shares the channel, so this is wrong.

Question 53 Computer Science

Bluetooth Is an example of:

- A. Personal area network ✓ **Correct answer**
- B. Local area network
- C. Virtual private network
- D. None of these

A. Bluetooth links nearby personal devices, a personal area network.

B. A LAN covers a room or building, larger than Bluetooth's range.

C. A VPN runs over public networks, not a short-range link.

D. Bluetooth is a personal area network, so this is wrong.

Question 54 Computer Science

A _____ Is a device that forwards packets between networks by processing the routing

Included in the packet.

- A. Bridge
- B. Firewall
- C. Router ✓ **Correct answer**
- D. All of these

A. A bridge forwards frames within a LAN, not packets between networks.

B. A firewall filters traffic, it does not route packets between networks.

C. A router forwards packets between networks using routing information.

D. Only the router does this, so this is wrong.

Question 55 Computer Science

A list of protocols used by a system, one protocol per layer, Is called;

- A. Protocol architecture
- B. Protocol stack ✓ **Correct answer**
- C. Protocol suit
- D. None of these

A. Protocol architecture is the overall design, not one protocol per layer.

B. One protocol per layer, taken together, is the protocol stack.

C. Protocol suite is a family of protocols, not strictly one per layer.

D. The protocol stack is the list, so this is wrong.

Question 56 Computer Science

Network congestion occurs-.

- A. In case of traffic overloading' ✓ **Correct answer**

- C. When connection between two nodes terminates
- D. None of these

A. Congestion occurs when traffic overloads the network.

B. A system terminating does not cause congestion.

C. A single connection ending does not cause congestion.

D. Traffic overloading causes congestion, so this is wrong.

Question 57 Computer Science

Which one of the following extends a private network across public networks?

- A. Local area network
- B. Virtual private network ✓ **Correct answer**
- C. Enterprise private network
- D. Storage area network

A. A LAN stays local, it does not cross public networks.

B. A virtual private network extends a private network across public networks.

C. An enterprise private network stays private, it does not use public networks.

D. A storage area network links storage, not remote sites.

Question 58 Computer Science

The network layer concerns with:

- A. Bits
- B. Frames
- C. Packets ✓ **Correct answer**
- D. None of these

e physical layer's concern.

B. Frames are the data-link layer's concern.

C. The network layer moves packets.

D. Packets are the network layer's unit, so this is wrong.

Question 59 Computer Science

Which one of the following is not a function of network layer?

- A. Routing
- B. Inter-networking
- C. Congestion control
- D. None of these ✓ **Correct answer**

A. Routing is a network-layer function.

B. Inter-networking is a network-layer function.

C. Congestion control is a network-layer function.

D. All three are network-layer functions, so none of them is the exception.

Question 60 Computer Science

The 4 byte IP address consists of:

- A. Network address
- B. Host address
- C. Both A and B ✓ **Correct answer**
- D. None of these

A. A 4-byte IP address has a network part, but also a host part.

B. A 4-byte IP address has a host part, but also a network part.

address consists of a network address and a host address.

D. Both parts are present, so this is wrong.

Question 61 Computer Science

In virtual circuit, network each packet contains:

- A. Full source and destination address
- B. A short VC number ✓ **Correct answer**
- C. Both A and B
- D. None of these

A. Full source and destination addresses are carried by datagrams, not virtual-circuit packets.

B. Each virtual-circuit packet carries a short VC number.

C. Virtual-circuit packets do not carry both.

D. The short VC number is carried, so this is wrong.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys A (Full source and destination address); virtual-circuit packets carry a short VC number, full addresses belong to datagram packets. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 62 Computer Science

Which one of the following routing algorithm can be used for network layer design?

- A. Shortest path algorithm
- B. Distance vector routing
- C. Link stale routing
- D. All of these ✓ **Correct answer**

path routing is used at the network layer.

B. Distance vector routing is used at the network layer.

C. Link state routing is used at the network layer.

D. All three are network-layer routing algorithms.

Question 63 Computer Science

The network layer protocol of Internet is:

- A. Ethernet
- B. Internet protocol ✓ **Correct answer**
- C. Hypertext transfer protocol
- D. None of these

A. Ethernet is a link-layer technology, not the network-layer protocol.

B. The Internet protocol is the network-layer protocol of the Internet.

C. HTTP is an application-layer protocol.

D. The Internet protocol is the network-layer protocol, so this is wrong.

Question 64 Computer Science

ICMP is primarily used for

- A. Error and diagnostic functions ✓ **Correct answer**
- B. Addressing
- C. Forwarding
- D. None of these

A. ICMP is used for error reporting and diagnostics.

B. Addressing is done by IP, not ICMP.

g is done by routers, not ICMP.

D. Error and diagnostic functions are ICMP's job, so this is wrong.

Question 65 Computer Science

The lexical analyzer takes _____as Input and produces a stream of as output

- A. Source program tokens ✓ **Correct answer**
- B. Token, source program
- C. Both A & B
- D. None of these

A. The lexical analyzer takes the source program and produces a stream of tokens.

B. The input and output are reversed in this option.

C. Both A and B cannot hold, the directions differ.

D. The source-program-in, tokens-out form is right, so this is wrong.

Note: Note: Option A is compressed in the reproduction ('Source program tokens'); it means source program in, tokens out. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 66 Computer Science

Parsing Is also known as:

- A. Lexical Analysis
- B. Syntax Analysis ✓ **Correct answer**
- C. Semantic Analysis
- D. Code Generation

A. Lexical analysis is tokenizing, not parsing.

B. Parsing is syntax analysis.

analysis checks meaning, not syntax.

D. Code generation produces code, it is not parsing.

Note: Note: Option A is misprinted as '(M Lexical Analysis' in the reproduction; it is Lexical Analysis. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 67 Computer Science

A compiler program written In a high level language is called:

- A. Source Program ✓ **Correct answer**
- B. Object Program
- C. Machine Language Program
- D. None of these

A. A compiler written in a high-level language is called a source program.

B. The object program is the compiled output, not the compiler source.

C. A machine-language program is the compiled output.

D. The source program is the right term, so this is wrong.

Question 68 Computer Science

The number of pixels stored In the frame buffer of a graphics system is known as:

- A. Resolution ✓ **Correct answer**
- B. Depth
- C. Mass
- D. None of these

A. The number of pixels in the frame buffer is the resolution.

B. Depth is bits per pixel, not the pixel count.

ot a frame-buffer measure.

D. Resolution is the pixel count, so this is wrong.

Question 69 Computer Science

In graphical system, the array of pixels In the picture Is stored in:

- A. Memory
- B. Frame buffer ✓ **Correct answer**
- C. Processor
- D. All of these

A. Memory is general storage, not the pixel array store.

B. The pixel array is stored in the frame buffer.

C. The processor computes, it does not store the pixel array.

D. Only the frame buffer stores it, so this is wrong.

Question 70 Computer Science

Which of the following is key characteristic of hackor?

- A. Afraid to say they don't know the answer
- B. Willing to find answers on their own ✓ **Correct answer**
- C. Not willing to find answers on their own
- D. All of these

A. Being afraid to admit ignorance is not a hacker characteristic.

B. A hacker is willing to find answers on their own.

C. Unwillingness to find answers contradicts the hacker ethic.

D. B and C contradict each other, so 'all of these' cannot hold.

PRINTED-KEY CORRECTION: the reproduction keys D (All of these); B and C are direct opposites, so 'all of these' is impossible, and the hacker characteristic is willingness to find answers independently. — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 71 Computer Science

Which of the following focuses on the discovery of (previously) unknown properties on data?

- A. Data mining ✓ **Correct answer**
- B. Big Data
- C. Data wrangling
- D. Machine Learning

A. Data mining discovers previously unknown properties in data.

B. Big Data is large-scale data, not the discovery process.

C. Data wrangling cleans data, it does not discover properties.

D. Machine learning builds models, discovery of unknown properties is data mining.

Question 72 Computer Science

Which process model should be used in virtually all situations of web engineering?

- A. Incremental Model ✓ **Correct answer**
- B. Waterfall Model
- C. Spiral Model
- D. None of these

A. The incremental model is recommended for virtually all web engineering situations.

B. Waterfall is too rigid for web engineering.

not the recommended default for web engineering.

D. The incremental model is the recommended one, so this is wrong.

Question 73 Computer Science

Which analysis is a part of Analysis model of the web engineering process framework?

- A. Content Analysis
- B. Interaction Analysis
- C. Functional Analysis
- D. All of these ✓ **Correct answer**

A. Content analysis is part of the analysis model.

B. Interaction analysis is part of the analysis model.

C. Functional analysis is part of the analysis model.

D. All three analyses are part of the analysis model.

Question 74 Computer Science

Which of the following statements are Incorrect with reference to web-based systems?

Web-based systems:

- A. Should be un-scalable ✓ **Correct answer**
- B. Must be to cope uncertain, random heavy demand on services
- C. Must be secure
- D. Are subsect to assorted legal, social and ethical scrutiny

A. Web systems should be scalable, so 'should be un-scalable' is the incorrect statement.

B. Coping with uncertain heavy demand is a correct requirement.

C. Being secure is a correct requirement.

al, social and ethical scrutiny is a correct requirement.

Note: Note: No printed key in the reproduction; only A states something false about web-based systems. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 75 Computer Science

What category of web-based system would you aBsign-to electronic shopping?

- A. Information
- B. Interactive
- C. Transaction-oriented ✓ **Correct answer**
- D. Workflow-oriented

A. Information systems only present information, they do not sell.

B. Interactive systems are for dialogue, not for buying.

C. Electronic shopping is a transaction-oriented web system.

D. Workflow-oriented systems manage work flows, not shopping.

Note: Note: Option B is misprinted as '(Bi Interactive' in the reproduction; it is Interactive. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 76 Computer Science

What category of web-based system would you assign to discussion groups?

- A. Collaborative work .
- B. Online communities ✓ **Correct answer**
- C. Web portals
- D. Workflow-oriented

A. Collaborative work is for shared tasks, not discussion groups.

B. Discussion groups are online communities.

…ils aggregate links, they are not discussion groups.

D. Workflow-oriented systems manage work flows, not discussions.

Question 77 Computer Science

W3C stands for.

- A. World Wide Web Consortium ✓ **Correct answer**
- B. World Wide Web Collaboration
- C. World Wide Web Community
- D. None of these

A. W3C stands for World Wide Web Consortium.

B. Collaboration is not the expansion.

C. Community is not the expansion.

D. The Consortium expansion is correct, so this is wrong.

Question 78 Computer Science

Which of the following Is a risk associated with using hypertext in web applications?

- A. Loss of sense of locality and direction
- B. Cognitive overload for users
- C. Both A and B ✓ **Correct answer**
- D. None of these

A. Hypertext can make users lose locality and direction.

B. Hypertext can overload users cognitively.

C. Both risks occur with hypertext.

D. Both risks are real, so this is wrong.

79 Computer Science

Which of the following Is not a NosQL data Hara?

- A. SQL Server ✓ **Correct answer**
- B. MongoDB
- C. Cassandra
- D. None of these

A. SQL Server is a relational database, not a NoSQL store.

B. MongoDB is a NoSQL store.

C. Cassandra is a NoSQL store.

D. SQL Server is relational, so this is wrong.

Question 80 Computer Science

Which of the following is a NoSQL Database type?

- A. SQL
- B. Document databases ✓ **Correct answer**
- C. JSON
- D. All of these

A. SQL is a query language, not a NoSQL database type.

B. Document databases are a NoSQL database type.

C. JSON is a data format, not a database type.

D. Only document databases are the type, so this is wrong.

Question 81 Computer Science

Which one of the following is an example of Operating System?

- B. Microsoft Excel
- C. Microsoft Access
- D. Microsoft Windows ✓ **Correct answer**

A. Microsoft Word is an application, not an operating system.

B. Microsoft Excel is an application, not an operating system.

C. Microsoft Access is an application, not an operating system.

D. Microsoft Windows is an operating system.

Question 82 Computer Science

By default on which page the Header or the Footer is printed, In MS Word?

- A. On first page
- B. On alternate page
- C. On every page ✓ **Correct answer**
- D. None of these

A. Headers and footers are not printed only on the first page.

B. Headers and footers are not printed only on alternate pages.

C. By default the header and footer print on every page.

D. They print on every page, so this is wrong.

Question 83 Mathematics

Complete the number series: 15, 31, 63, 127, 255

- A. '513
- B. 511 ✓ **Correct answer**
- C. 523

A. The series doubles and adds 1, so 511 follows 255, not 513.

B. 15, 31, 63, 127, 255 doubles and adds 1 each step, giving 511.

C. 523 does not follow the doubling pattern.

D. 517 does not follow the doubling pattern.

Note: Note: Option A is misprinted as '513 in the reproduction; it is 513, which does not follow the series. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 84 Mathematics

Solve the equation: {1/4 + 5/8} + {1/2 + 3/4} = ?

- A. 35/32
- B. 10/7
- C. 5/12
- D. 7/10

No answer is given for this question, and none is taught. NO CORRECT OPTION — DEFECTIVE-excluded (decided by assistant under owner's 8 Nov 2026 delegation)

A. 1/4 + 5/8 is 7/8 and 1/2 + 3/4 is 5/4, their sum is 17/8, not 35/32.

B. The sum is 17/8, not 10/7.

C. The sum is 17/8, not 5/12.

D. The sum is 17/8, not 7/10.

Question 85 English

"To fact the music means:

- B. To be offered warm hospitality
- C. To be on the front seat in a concert
- D. To bear the consequences ✓ **Correct answer**

A. Being greeted rudely is not facing the music.

B. Warm hospitality is not facing the music.

C. A front seat at a concert is not facing the music.

D. To face the music means to bear the consequences.

Question 86 English

What Is the synonym of Posthumous?

- A. After death ✓ **Correct answer**
- B. Moisture
- C. Rich
- D. Rear

A. Posthumous means after death, published or occurring after death.

B. Moisture is water content, not posthumous.

C. Rich is wealthy, not posthumous.

D. Rear is at the back, not posthumous.

Question 87 English

What Is the antonym of “Meandering"?

- A. Sliding
- B. Straight ✓ **Correct answer**
- C. Sloping

A. Sliding is moving smoothly, not the opposite of meandering.

B. Meandering means winding, its opposite is straight.

C. Sloping is inclined, not the opposite of meandering.

D. Curved is close to meandering, not its opposite.

Question 88 English

Find the correctly spelt word.

- A. Dlcotomy
- B. Dlcotemy
- C. Dichotomy ✓ **Correct answer**
- D. Dechotomy

A. Dlcotomy is misspelt.

B. Dlcotemy is misspelt.

C. Dichotomy is the correct spelling.

D. Dechotomy is misspelt.

Question 89 Everyday Science

To which fruit is Plantain similar to?

- A. Grapefruit
- B. Apples
- C. Jackfruit
- D. Bananas ✓ **Correct answer**

A. A plantain is not similar to a grapefruit.

is not similar to an apple.

C. A plantain is not similar to a jackfruit.

D. A plantain is similar to a banana.

Question 90 Everyday Science

Exposure to sunlight results in formation of In the body.

- A. Vitamin A
- B. Vitamin C
- C. Vitamin K
- D. Vitamin D ✓ **Correct answer**

A. Sunlight does not form vitamin A in the body.

B. Sunlight does not form vitamin C in the body.

C. Sunlight does not form vitamin K in the body.

D. Sunlight forms vitamin D in the body.

Question 91 General Knowledge

Who was the first American President to resign while in office?

- A. Theodore Roosevelt
- B. Bill Clinton
- C. Richard Nixon ✓ **Correct answer**
- D. John Qulcy Adams

A. Theodore Roosevelt did not resign while in office.

B. Bill Clinton did not resign while in office.

C. Richard Nixon resigned in 1974, the first American president to do so.

cy Adams did not resign while in office.

Question 92 General Knowledge

The current capital of Kazakhstan is Astana-Name the former capital:

- A. Almaty ✓ **Correct answer**
- B. Dushanbe
- C. Bishkek
- D. None of these

A. Almaty was the capital of Kazakhstan before Astana.

B. Dushanbe is the capital of Tajikistan.

C. Bishkek is the capital of Kyrgyzstan.

D. Almaty was the former capital, so this is wrong.

Question 93 General Knowledge

In Geography what do you understand by “Pangaea“?

- A. A Super continent ✓ **Correct answer**
- B. Hills formed by Lava outflow
- C. Concentration of Sulpher in hot springs
- D. None of these

A. Pangaea was the ancient supercontinent.

B. Pangaea is not hills formed by lava.

C. Pangaea is not a sulphur concentration.

D. Pangaea was a supercontinent, so this is wrong.

94 General Knowledge

After partition of Bengal, the Capital of East Bengal and Assam was.'

- A. Dhaka ✓ **Correct answer**
- B. Calcutta
- C. Chittagong
- D. Sylhett

A. After the 1905 partition of Bengal, Dhaka was the capital of East Bengal and Assam.

B. Calcutta stayed the capital of Bengal proper.

C. Chittagong was not the capital.

D. Sylhet was not the capital.

Question 95 General Knowledge

Which was the official language during the Muslim Rule in India?

- A. Urdu
- B. Turkish
- C. Persian ✓ **Correct answer**
- D. Arabic

A. Urdu was not the official language of Muslim rule in India.

B. Turkish was not the official language.

C. Persian was the official language during Muslim rule in India.

D. Arabic was not the official language.

Question 96 General Knowledge

Which of the following Is not an Olympic Sport?

ash ✓ **Correct answer**

- B. Badminton
- C. Wrestling
- D. Fencing

A. Squash is not an Olympic sport.

B. Badminton is an Olympic sport.

C. Wrestling is an Olympic sport.

D. Fencing is an Olympic sport.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys C (Wrestling); wrestling is an Olympic sport and squash was not an Olympic sport at the exam date (2017). — decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 97 General Knowledge

The flag of which country is also known as the Union Jack?

- A. UK ✓ **Correct answer**
- B. USA
- C. New Zealand
- D. Barbados

A. The Union Jack is the flag of the United Kingdom.

B. The USA flag is the Stars and Stripes, not the Union Jack.

C. New Zealand has its own flag, not the Union Jack.

D. Barbados has its own flag, not the Union Jack.

98 General Knowledge

Boao Forum for Asia, which holds Its annual conference at Boao Hainan Province, China, was originally proposed by former President Ramos of Philippines, former Prime Minister Monhlro Hosokawa of Japan and:

- A. Former Prime Minister Bob Hawke of Australia ✓ **Correct answer**
- B. Former Prime Minister Mahathir Muhammad of Malaysia
- C. Former President Hu Jin Tao of China
- D. Former Prime Minister Shaukat Aziz of Pakistan

A. Bob Hawke of Australia proposed the Boao Forum with Ramos and Hosokawa.

B. Mahathir Muhammad did not propose the Boao Forum.

C. Hu Jintao did not propose the Boao Forum.

D. Shaukat Aziz did not propose the Boao Forum.

Question 99 Urdu

ترکی تمام ہونا محاورہ ہے اس کا مفہوم کیا ہے؟

A. غیر ملکی سفر پر روانہ ہونا•

B. بجٹ ختم کرنا•

C. کوشش ترک کر دینا•

Correct answer ✓ D. بہادری ختم ہونا•

A. ترکی تمام ہونا is not about foreign travel.

B. ترکی تمام ہونا is not about a budget ending.

C. ترکی تمام ہونا is not about giving up an effort.

D. ترکی تمام ہونا ery coming to an end

Note: Note: Urdu idiom as printed in the reproduction; the printed key D is kept. Decided by the assistant under the owner's 8 Nov 2026 delegation.

Question 100 Urdu

امیر خسرو کس شہر میں مدفون ہیں؟

A. عمرکوٹ

B. ملتان

Correct answer ✓ C. دہلی

D. رائے بریلی

A. Amir Khusro is not buried in Umarkot.

B. Amir Khusro is not buried in Multan.

C. Amir Khusro is buried in Delhi, beside Nizamuddin Auliya.

D. Amir Khusro is not buried in Rae Bareli.

Note: Note: PRINTED-KEY CORRECTION: the reproduction keys D (Rae Bareli); Amir Khusro is buried in Delhi. — decided by the assistant under the owner's 8 Nov 2026 delegation.

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