BunkPoint MOCK TEST

SPMCIL Assistant Manager (IT) 2026 Mock Test 1

Total Questions: **60** | Sections: **12**

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Operating System

Q.1–7 | 7 questions

Q.1 A paging system uses 4 KB pages and loads a process of 10 KB. Which type of fragmentation occurs and how much?

(A) External, 2 KB

(B) Internal, 6 KB

(C) Internal, 2 KB

(D) Internal, 4 KB

(E) External, 10 KB

Q.2 Memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (in that order) are free. Processes of 212 KB, 417 KB, 112 KB and 426 KB arrive in order and are placed using the first fit method. Which process has to wait?

(A) 212 KB

(B) 112 KB

(C) 426 KB

(D) None, all are allocated

(E) 417 KB

Q.3 Processes P1, P2 and P3 arrive together at time 0 with CPU bursts of 24 ms, 3 ms and 3 ms respectively. Under FCFS scheduling in the order P1, P2, P3, what is the average waiting time?

(A) 21 ms
(B) 17 ms
(C) 3 ms
(D) 27 ms
(E) 13 ms

Q.4 A system requires every process to request all the resources it needs before it begins execution. Which necessary condition for deadlock does this rule negate?

(A) Starvation
(B) Hold and wait
(C) No preemption
(D) Circular wait
(E) Mutual exclusion

Q.5 For the page reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1 with 3 frames, how many page faults occur under the optimal replacement policy?

(A) 15
(B) 12
(C) 8
(D) 9
(E) 10

Q.6 Which of the following is private to each thread rather than shared with the other threads of the same process?

(A) Program code
(B) Stack space
(C) Global variables
(D) Heap memory
(E) Open files

Q.7 A counting semaphore is initialised to 5. Then 10 wait (P) operations and 4 signal (V) operations are completed in the classic implementation, where the value may become negative. What is the state of the semaphore?

(A) Value -1; no process is blocked
(B) Value 1; one process blocked
(C) Value 1; no process is blocked
(D) Value -1; one process blocked
(E) Value 0; one process blocked

Data Structure

Q.8–15 | 8 questions

Q.8 Which statement about heap sort on an array of n distinct elements is correct?

(A) It is a stable sort with $O(n \log n)$ worst-case time

(B) It needs $O(n)$ extra space for the output array

(C) Its best-case time is $O(n)$ for an already sorted array

(D) Its worst-case time is $O(n^2)$ when the input is sorted

(E) Its worst-case time is $O(n \log n)$ and it sorts in place

Q.9 A singly linked list with only a head pointer holds n nodes. What is the time needed to insert a new node at the tail?

(A) $O(n^2)$

(B) $O(n)$

(C) $O(\log n)$

(D) $O(n \log n)$

(E) $O(1)$

Q.10 Which of the following problems is naturally solved by breadth first search rather than depth first search?

(A) Classifying graph edges as tree edges and back edges

(B) Finding articulation points with low-link values

(C) Fewest-edge path from a source in an unweighted graph

(D) Identifying strongly connected components of a digraph

(E) Topological ordering of a DAG using finish times

Q.11 A double-ended queue (deque) is restricted so that insertion happens only at the rear and deletion only at the front. The restricted structure behaves as a

(A) Queue

(B) Stack

(C) Priority queue

(D) Linked stack

(E) Binary tree

Q.12 An algorithm divides its input into 4 subproblems of half the size and combines their results in linear time. Its running time $T(n) = 4T(n/2) + n$ is

(A) $\Theta(n^2 \log n)$

(B) $\Theta(n^2)$

(C) $\Theta(n^3)$

(D) $\Theta(n \log n)$

(E) $\Theta(n)$

Q.13 A hash table of size 20 currently stores 15 keys. What is its load factor?

(A) 1.25
(B) 1.33
(C) 0.50
(D) 0.25
(E) 0.75

Q.14 What is the maximum number of nodes in a binary tree of height 4, taking the height of the root as 0?

(A) 16
(B) 31
(C) 15
(D) 63
(E) 32

Q.15 Which sorting algorithm performs at most $n - 1$ swaps on an array of n elements, even in the worst case?

(A) Selection sort
(B) Bubble sort
(C) Quick sort
(D) Heap sort
(E) Insertion sort

Object Oriented Programming

Q.16–19 | 4 questions

Q.16 Class C inherits directly from class A and class B at the same time. This type of inheritance is called

(A) Multilevel inheritance
(B) Hierarchical inheritance
(C) Single inheritance
(D) Hybrid inheritance
(E) Multiple inheritance

Q.17 Which statement about an abstract class in a language such as Java is correct?

(A) It cannot be instantiated, but may define constructors
(B) It has to declare at least one abstract method
(C) It cannot be used as the parent of another class
(D) It cannot contain a concrete method with a body
(E) It can be instantiated if its methods have bodies

Q.18 Which statement about a shallow copy of an object that has pointer members is correct?

(A) The pointed-to data is duplicated for the new object

(B) The original object's pointer members are reset to null

(C) Modifying one object's data leaves the other unchanged

(D) Both objects hold pointers to the same memory block

(E) Each object receives its own separate heap allocation

Q.19 Class B is derived from class A. When an object of class B is created and later destroyed, the order of constructor and destructor calls is

(A) Constructors: A then B; destructors in unspecified order

(B) Constructors: B then A; destructors: B then A

(C) Constructors: A then B; destructors: B then A

(D) Constructors: B then A; destructors: A then B

(E) Constructors: A then B; destructors: A then B

Database Management Systems

Q.20–26 | 7 questions

Q.20 In the ACID properties of a transaction, the Isolation property ensures that

(A) a transaction moves the database from one consistent state to another

(B) a unique timestamp is given to a transaction before it begins execution

(C) committed changes persist even after a sudden system crash occurs

(D) concurrent transactions behave as if they ran one after another

(E) the operations of a transaction are applied in full or not at all

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Q.21 A relation $R(A, B, C, D)$ has candidate key $\{A, B\}$ and functional dependencies $AB \rightarrow CD$ and $A \rightarrow C$. All attribute values are atomic. Which statement is correct?

(A) R is in 1NF but not in 2NF

(B) R is in 2NF but not in 3NF

(C) R fails even the 1NF test

(D) R is in 3NF but not in BCNF

(E) R is in BCNF but not in 4NF

Q.22 A relation $R(A, B, C)$ satisfies only the functional dependency $A \rightarrow B$. Which decomposition of R is a lossless-join decomposition?

(A) R1(A) and R2(B, C)

(B) R1(A, C) and R2(B, C)

(C) R1(A, B) and R2(A, C)

(D) R1(A, B) and R2(C)

(E) R1(A, B) and R2(B, C)

Q.23 Consider the following statements about transaction isolation.
I. A dirty read always involves reading data that another transaction has already committed to the database.
II. A phantom read occurs when a repeated range query sees new rows inserted by another transaction.
III. The SERIALIZABLE isolation level allows phantom reads to occur during a transaction.
Which of the statements is/are correct?

(A) II and III only
(B) II only
(C) I only
(D) III only
(E) I and II only

Q.24 Consider the following statements about SQL subqueries.
I. EXISTS is true for every subquery that returns at least one row.
II. The IN operator requires the subquery to return exactly one row.
III. NOT IN returns no rows if the subquery result contains a NULL value.
Which of the statements is/are correct?

(A) II only
(B) II and III only
(C) I and III only
(D) I, II and III
(E) I and II only

Q.25 Which of the following views is generally NOT updatable in standard SQL?

(A) a view that renames the columns of a single table
(B) a view selecting rows of one table with a WHERE clause
(C) a view projecting all columns of one base table
(D) a view over one table that includes its primary key
(E) a view built using GROUP BY and aggregate functions

Q.26 In table Emp(EmpID, DeptID), the nullable column DeptID is a foreign key referencing Dept(DeptID), and no cascading action is defined. Which operation violates referential integrity?

(A) Inserting a new Emp row in which DeptID is left NULL
(B) Updating the name of an employee who is already stored
(C) Deleting an Emp row that belongs to some department
(D) Inserting a Dept row that has a brand new DeptID value
(E) Deleting a Dept row that still has matching Emp rows

Compiler Design and Language Processor

Q.27–29 | 3 questions

Q.27 Consider the following statements about code optimisation.
I. Dead code elimination removes statements whose results are never used later.
II. Constant folding evaluates expressions made of constants at compile time.
III. Loop-invariant code motion moves invariant computations into the body of the loop.
Which of the statements is/are correct?

(A) III only
(B) I and II only
(C) II and III only
(D) I only
(E) I, II and III

Q.28 A compiler builds a directed acyclic graph (DAG) for the expression $(a + b) * (a + b) - c$. How many nodes does the DAG contain?

(A) 7
(B) 9
(C) 5
(D) 8
(E) 6

Q.29 Which task is performed by the lexical analyser of a compiler?

(A) Converting the source characters into a stream of tokens
(B) Generating target machine instructions from the syntax tree
(C) Allocating registers to the variables of the intermediate code
(D) Building a parse tree according to the grammar rules
(E) Checking that operands of an operator have compatible types

Computer Organization

Q.30–32 | 3 questions

Q.30 A fully associative cache has 64 blocks of 16 bytes each, and main memory addresses are 32 bits long. How many bits does the tag field contain?

(A) 24
(B) 32
(C) 28
(D) 22
(E) 26

Q.31 A 5-stage pipeline executes 100 instructions. Of these, 20 are branches, each causing a 2-cycle stall, and no other hazards occur. How many clock cycles are needed in total?

(A) 140
(B) 164
(C) 144
(D) 104
(E) 124

Q.32 Which I/O technique keeps the CPU busy by repeatedly checking the device status until the transfer is complete?

(A) Programmed I/O
(B) Interrupt-driven I/O
(C) Memory-mapped I/O
(D) Direct memory access
(E) Isolated I/O

Microprocessor and Computer Hardware

Q.33–34 | 2 questions

Q.33 During start-up of a personal computer, which activity does the BIOS carry out first to verify the hardware?

(A) Start of the disk scheduler
(B) Power-On Self-Test (POST)
(C) Execution of the boot sector
(D) Setup of the device drivers
(E) Loading of the OS kernel

Q.34 An administrator wants maximum speed and full disk capacity and accepts that the data is lost if one disk fails. Which RAID level fits?

(A) RAID 1
(B) RAID 6
(C) RAID 10
(D) RAID 0
(E) RAID 5

Computer Network

Q.35–41 | 7 questions

Q.35 Which statement correctly contrasts time division multiplexing (TDM) with frequency division multiplexing (FDM)?

(A) In TDM, signals occupy different frequency bands at the same time
(B) In FDM, signals are interleaved bit by bit on one frequency band
(C) In TDM, signals share the whole bandwidth using different time slots
(D) In TDM, guard bands are placed between adjacent frequency channels
(E) In FDM, each signal uses the full bandwidth during its own time slot

Q.36 Which OSI layer provides process-to-process delivery using port numbers?

(A) Application layer
(B) Network layer
(C) Transport layer
(D) Session layer
(E) Data link layer

Q.37 A host sends a ping, and the echo request and echo reply messages are exchanged. To which layer of the TCP/IP model does this protocol belong?

(A) Transport layer
(B) Presentation layer
(C) Link layer
(D) Internet layer
(E) Application layer

Q.38 In the Selective Repeat ARQ protocol with n-bit sequence numbers, the maximum size of the sender window is

(A) $2^n + 1$
(B) n
(C) 2^n
(D) $2^n - 1$
(E) 2^{n-1}

Q.39 Which header field is present in a TCP segment header but absent from a UDP datagram header?

(A) Sequence number
(B) Destination port
(C) Length
(D) Checksum
(E) Source port

Q.40 Poison reverse differs from simple split horizon in distance vector routing because it

(A) omits the route from updates sent to the neighbours
(B) floods the route to the routers within the same area
(C) delays acceptance of new routes for a hold-down period
(D) advertises the route back to its source with an infinite metric
(E) sends a routing update when the network topology changes

Q.41 The four networks 192.168.0.0/24, 192.168.1.0/24, 192.168.2.0/24 and 192.168.3.0/24 can be aggregated into the single prefix

(A) 192.168.0.0/23
(B) 192.168.0.0/24
(C) 192.168.0.0/21
(D) 192.168.0.0/20
(E) 192.168.0.0/22

Software Engineering

Q.42–44 | 3 questions

Q.42 Which of the following is a preference stated in the Agile Manifesto?

(A) Contract negotiation over customer collaboration

(B) Individuals and interactions over processes and tools

(C) Following a plan over responding to change

(D) Comprehensive documentation over working software

(E) Processes and tools over individuals and interactions

Q.43 In a UML use case diagram, which relationship shows that the behaviour of one use case is optionally added to another use case under certain conditions?

(A) Extend

(B) Include

(C) Association

(D) Realisation

(E) Generalisation

Q.44 Which software process model places explicit emphasis on risk analysis in every iteration?

(A) Incremental model

(B) RAD model

(C) Spiral model

(D) V-model

(E) Waterfall model

Web Technology

Q.45–47 | 3 questions

Q.45 A web page whose content is built from a database every time a user requests it is best described as

(A) a static page delivered as a stored HTML file

(B) a page styled through an external stylesheet

(C) an applet executed inside the browser sandbox

(D) a dynamic page created by server-side scripts

(E) a page served from a local browser cache copy

Q.46 In the Model-View-Controller (MVC) pattern, which component holds the application data and the business rules?

(A) Model

(B) Router

(C) Template

(D) View

(E) Controller

Q.47 Which statement correctly describes WSDL?

(A) A server-side language for building dynamic web page output

(B) A registry in which providers publish and discover web services

(C) A lightweight notation for exchanging data between browser and server

(D) An XML format describing the operations and endpoints of a service

(E) A messaging protocol that wraps service requests in XML envelopes

Data Warehousing and Data Mining

Q.48–52 | 5 questions

Q.48 Which of the following is NOT a characteristic of a data warehouse as defined by Inmon?

(A) Subject-oriented

(B) Non-volatile

(C) Integrated

(D) Time-variant

(E) Transaction-oriented

Q.49 Agglomerative hierarchical clustering begins with

(A) a density threshold and grows regions of closely packed points

(B) each object as its own cluster and merges the closest clusters

(C) k random centroids and reassigns objects to the nearest one

(D) all objects in one cluster and splits it again and again

(E) a labelled training set and predicts the cluster of new objects

Q.50 In OLAP, which operation selects a sub-cube by specifying values on two or more dimensions?

(A) Pivot

(B) Drill-down

(C) Roll-up

(D) Slice

(E) Dice

Q.51 The Apriori property used in association rule mining states that

(A) every subset of a frequent itemset must itself be frequent

(B) every superset of a frequent itemset must also be frequent

(C) the support of an itemset exceeds the support of each subset

(D) every subset of an infrequent itemset must also be infrequent

(E) an itemset is frequent if any one of its subsets is frequent

Q.52 Compared with OLTP systems, OLAP systems typically

(A) run fewer, complex queries over large historical datasets

(B) hold current operational records of one single application

(C) favour highly normalised schemas to reduce data redundancy

(D) process very many short update transactions on live data

(E) give priority to row level locking for concurrent writers

Computer and Network Security

Q.53–60 | 8 questions

Q.53 The primary purpose of the TLS handshake between a client and a server is to

(A) encrypt the bulk data using the server's private key

(B) verify the integrity of the messages using a MAC alone

(C) translate the server's domain name into an IP address

(D) authenticate the server and agree on shared session keys

(E) negotiate a network layer tunnel between two networks

Q.54 In RSA with primes $p = 3$ and $q = 11$ and public exponent $e = 7$, what is the ciphertext of the plaintext 2?

(A) 23

(B) 14

(C) 8

(D) 17

(E) 29

Q.55 Consider the following statements about malware.
I. A worm always needs a host program to execute before it can replicate.
II. A trojan appears to be useful software while carrying hidden malicious code.
III. Ransomware encrypts or locks the victim's data and demands a payment.
Which of the statements is/are correct?

(A) II and III only

(B) I and II only

(C) I, II and III

(D) I and III only

(E) I only

Q.56 In a public key infrastructure, which entity issues the digital certificate that binds a public key to an identity?

(A) Internet Service Provider
(B) Certification Authority
(C) Domain Name Registrar
(D) Registration Authority
(E) Key Distribution Centre

Q.57 Which security service ensures that a sender cannot later deny having sent a message?

(A) Confidentiality
(B) Availability
(C) Data integrity
(D) Non-repudiation
(E) Entity authentication

Q.58 A website saves visitors' comments without sanitising them. A comment containing a script runs in every later visitor's browser and sends their session cookies to the attacker. This attack is

(A) Cross-site request forgery
(B) Reflected cross-site scripting
(C) Blind SQL injection attack
(D) Stored cross-site scripting
(E) Session fixation attack

Q.59 In a network of 20 users, every pair of users must share a distinct secret key for symmetric encryption. How many keys are required in total?

(A) 40
(B) 400
(C) 380
(D) 210
(E) 190

Q.60 A distributed denial of service (DDoS) attack mainly threatens which security goal?

(A) Integrity
(B) Confidentiality
(C) Availability
(D) Non-repudiation
(E) Authenticity

Get the Answers with Explanations

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