# QUIZ-A-THON

## SECTION 1

Basic IT / Computer Awareness

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**1000 Multiple Choice Questions**

*Difficulty: Easy to Moderate | Quiz-A-Thon / R-CAT Level*

*Exam-Ready | Printable | Professionally Formatted*

# Cloud Computing

### *Definition of Cloud Computing*

**Q1. What is cloud computing?**

A) Delivering computing services over the internet
B) A type of weather prediction technology
C) A local network technology
D) A hardware manufacturing method

**Correct Answer: A**

**Q2. Cloud computing allows users to access resources via which medium?**

A) USB drives
B) The internet
C) Bluetooth
D) Infrared

**Correct Answer: B**

**Q3. Which of the following best describes cloud computing?**

A) Buying physical servers for every task
B) Running programs only on local machines
C) On-demand delivery of IT resources over the internet
D) A type of mobile operating system

**Correct Answer: C**

**Q4. Cloud computing eliminates the need to:**

A) Use any computer at all
B) Maintain physical IT infrastructure locally
C) Connect to the internet
D) Write any software code

**Correct Answer: B**

**Q5. In cloud computing, who manages the physical servers?**

A) The end user at home
B) The cloud service provider
C) The local ISP only
D) The hardware manufacturer

**Correct Answer: B**

**Q6. Which term refers to using shared computing resources delivered as a service?**

A) Grid networking
B) Cloud computing
C) Bluetooth pairing
D) LAN hosting

**Correct Answer: B**

**Q7. Cloud computing is based on which fundamental concept?**

A) Shared pool of configurable resources
B) Dedicated single-user hardware
C) Only offline processing
D) Manual data entry systems

**Correct Answer: A**

**Q8. Which is NOT a characteristic of cloud computing?**

A) On-demand self-service
B) Broad network access
C) Requires physical presence at the data center
D) Resource pooling

**Correct Answer: C**

**Q9. Cloud computing services are typically offered on a:**

A) Fixed annual contract only
B) Pay-as-you-go basis
C) Free-for-all basis with no limits
D) One-time purchase model

**Correct Answer: B**

**Q10. Which organization defined cloud computing with five essential characteristics?**

A) IEEE
B) NIST
C) ISO
D) W3C

**Correct Answer: B**

**Q11. Cloud computing allows scaling resources:**

A) Only downward
B) Only upward
C) Both up and down as needed
D) Not at all

**Correct Answer: C**

**Q12. Which is a key benefit of cloud computing for businesses?**

A) Higher upfront hardware costs
B) Reduced capital expenditure on IT
C) Slower deployment times
D) More physical maintenance work

**Correct Answer: B**

**Q13. Cloud computing provides access to resources from:**

A) Only one fixed location
B) Anywhere with an internet connection
C) Only government offices
D) Only the provider's building

**Correct Answer: B**

**Q14. The term 'cloud' in cloud computing symbolizes:**

A) Rain and weather patterns
B) The internet and remote servers
C) Air pollution monitoring
D) Satellite communication only

**Correct Answer: B**

**Q15. Which of these is an essential characteristic of cloud computing as per NIST?**

A) Measured service
B) Unlimited free storage
C) No internet needed
D) Single user only

**Correct Answer: A**

### *Cloud Storage Concept*

**Q16. What is cloud storage?**

A) Storing data on remote servers accessed via the internet
B) Storing data on a floppy disk
C) Keeping files only on a USB drive
D) Printing documents for physical storage

**Correct Answer: A**

**Q17. Which of these is an example of a cloud storage service?**

A) Google Drive
B) Notepad
C) MS Paint
D) Calculator

**Correct Answer: A**

**Q18. Cloud storage allows users to:**

A) Store data that can only be accessed once
B) Access files from multiple devices over the internet
C) Store data without any security
D) Store data only in printed form

**Correct Answer: B**

**Q19. Dropbox is an example of:**

A) A programming language
B) A cloud storage service
C) A computer virus
D) A hardware component

**Correct Answer: B**

**Q20. Which of the following is NOT a cloud storage provider?**

A) iCloud
B) OneDrive
C) Turbo C
D) Google Drive

**Correct Answer: C**

**Q21. Cloud storage data is typically stored in:**

A) The user's RAM only
B) Remote data centers managed by a provider
C) The user's CPU cache
D) Floppy disks at the user's home

**Correct Answer: B**

**Q22. What happens to your cloud storage data if your local device is damaged?**

A) It is permanently lost
B) It remains safe on remote servers
C) It moves to a USB drive automatically
D) It gets printed out

**Correct Answer: B**

**Q23. Which feature is common in cloud storage services?**

A) Automatic file syncing across devices
B) Requiring manual cable connections
C) Working only offline
D) Deleting files after 24 hours

**Correct Answer: A**

**Q24. How much free storage does Google Drive typically offer to users?**

A) 1 GB
B) 5 GB
C) 15 GB
D) 100 GB

**Correct Answer: C**

**Q25. Cloud storage operates on the principle of:**

A) Storing data locally on each device
B) Storing data on remote servers with internet access
C) Only storing text files
D) Requiring physical media for every file

**Correct Answer: B**

**Q26. Which protocol is commonly used to access cloud storage?**

A) SMTP
B) HTTP/HTTPS
C) FTP only
D) Infrared

**Correct Answer: B**

**Q27. OneDrive is a cloud storage service by:**

A) Google
B) Apple
C) Microsoft
D) Amazon

**Correct Answer: C**

**Q28. iCloud storage is primarily associated with:**

A) Microsoft devices
B) Apple devices
C) Linux devices
D) Android devices only

**Correct Answer: B**

**Q29. A key advantage of cloud storage over local storage is:**

A) It requires no electricity
B) Data can be accessed from anywhere with internet
C) It is always free of cost
D) It does not need any password

**Correct Answer: B**

**Q30. Which of the following best describes data redundancy in cloud storage?**

A) Data is stored in only one location
B) Multiple copies of data are stored across different servers
C) Data is automatically deleted after a week
D) Data cannot be recovered once uploaded

**Correct Answer: B**

### *Examples of Cloud Usage*

**Q31. Which is an example of using cloud computing in daily life?**

A) Using Gmail for email
B) Writing on a physical notebook
C) Using a calculator watch
D) Reading a printed newspaper

**Correct Answer: A**

**Q32. Streaming movies on Netflix is an example of:**

A) Local computing
B) Cloud computing
C) Analog computing
D) Manual computing

**Correct Answer: B**

**Q33. Google Docs allows users to:**

A) Edit documents stored in the cloud collaboratively
B) Only view documents offline
C) Print documents without a printer
D) Create hardware designs

**Correct Answer: A**

**Q34. Backing up phone photos to Google Photos uses:**

A) Bluetooth technology
B) Cloud storage
C) Infrared transfer
D) USB cables only

**Correct Answer: B**

**Q35. Which of these activities uses cloud computing?**

A) Playing an offline board game
B) Using Zoom for video conferencing
C) Using a physical dictionary
D) Writing in a diary

**Correct Answer: B**

**Q36. Spotify music streaming is based on:**

A) FM radio signals
B) Cloud computing infrastructure
C) Cassette tape technology
D) Only Bluetooth

**Correct Answer: B**

**Q37. Uploading work files to SharePoint is an example of:**

A) Cloud collaboration
B) Local-only computing
C) Fax transmission
D) Postal mail

**Correct Answer: A**

**Q38. Using Microsoft 365 online applications relies on:**

A) Only local hardware
B) Cloud computing services
C) Telephone lines only
D) Physical CDs

**Correct Answer: B**

**Q39. Amazon Prime Video delivers content through:**

A) DVD mail service only
B) Cloud-based streaming
C) VHS tapes
D) Local broadcast TV

**Correct Answer: B**

**Q40. Which of the following does NOT use cloud computing?**

A) Sending email via Gmail
B) Using a standalone calculator with no internet
C) Editing files on Google Sheets
D) Storing photos on iCloud

**Correct Answer: B**

**Q41. Social media platforms like Facebook operate using:**

A) Only local servers at your home
B) Cloud infrastructure across many data centers
C) Single desktop computers
D) Only satellite connections

**Correct Answer: B**

**Q42. Cloud-based gaming services like Google Stadia run games on:**

A) The player's local hardware only
B) Remote cloud servers
C) Game cartridges
D) Built-in phone memory only

**Correct Answer: B**

**Q43. Online banking apps that sync across devices use:**

A) Only local storage
B) Cloud computing
C) Floppy disks
D) Printed records only

**Correct Answer: B**

**Q44. Which cloud service lets you store and share documents online?**

A) Google Drive
B) MS-DOS
C) BIOS
D) Command Prompt

**Correct Answer: A**

**Q45. Using Trello or Slack for project management is an example of:**

A) Offline computing
B) Cloud-based SaaS application
C) Hardware maintenance
D) Network cabling

**Correct Answer: B**

### *Advantages of Cloud Computing*

**Q46. Which of the following is an advantage of cloud computing?**

A) High upfront cost for hardware
B) Reduced IT maintenance burden
C) Slower data processing
D) Limited storage capacity

**Correct Answer: B**

**Q47. Cloud computing helps organizations reduce:**

A) Internet speed
B) Capital expenditure on IT infrastructure
C) Employee salaries
D) Product quality

**Correct Answer: B**

**Q48. Scalability in cloud computing means:**

A) Resources cannot be changed once set
B) Resources can be increased or decreased based on demand
C) Servers must be replaced manually
D) Storage is fixed forever

**Correct Answer: B**

**Q49. Which advantage of cloud computing supports disaster recovery?**

A) Local-only storage
B) Data backup across multiple remote locations
C) Keeping only one copy of data
D) No internet connectivity

**Correct Answer: B**

**Q50. Cloud computing enables businesses to:**

A) Avoid using the internet entirely
B) Focus on core business rather than IT management
C) Buy more physical servers
D) Hire more hardware technicians

**Correct Answer: B**

**Q51. Automatic software updates are an advantage of:**

A) Standalone desktop computing
B) Cloud computing
C) Analog computing
D) Mechanical computing

**Correct Answer: B**

**Q52. Cloud computing improves collaboration because:**

A) Only one person can access files at a time
B) Multiple users can work on files simultaneously from different locations
C) Files must be emailed back and forth only
D) Collaboration requires physical meetings only

**Correct Answer: B**

**Q53. One environmental advantage of cloud computing is:**

A) Increased electronic waste per company
B) Reduced energy consumption through shared resources
C) More physical data centers per company
D) Higher paper usage

**Correct Answer: B**

**Q54. Cloud computing provides high availability, meaning:**

A) Services are available only during business hours
B) Services are accessible almost all the time with minimal downtime
C) Users can only access data once a day
D) Servers are turned off at night

**Correct Answer: B**

**Q55. Which of these is NOT an advantage of cloud computing?**

A) Cost savings
B) Remote access
C) Requires no internet connection at all
D) Scalability

**Correct Answer: C**

**Q56. Cloud computing offers elasticity, which means:**

A) Resources stretch physically
B) System automatically adjusts capacity to match workload
C) Servers can bend without breaking
D) Wires become more flexible

**Correct Answer: B**

**Q57. A small startup benefits from cloud computing because:**

A) It must build its own data center first
B) It can access enterprise-level infrastructure without large investment
C) It needs to hire a large IT team
D) It cannot afford any computing at all

**Correct Answer: B**

**Q58. Speed of deployment is an advantage of cloud computing because:**

A) Physical servers arrive within minutes
B) New resources can be provisioned in minutes through the cloud
C) Code writes itself automatically
D) Hardware never needs configuration

**Correct Answer: B**

**Q59. Global reach is an advantage of cloud computing because:**

A) Data centers exist in one country only
B) Services can be deployed in multiple regions worldwide quickly
C) Users must travel to access servers
D) Only English-speaking countries have cloud access

**Correct Answer: B**

**Q60. Cloud computing increases productivity by:**

A) Removing the need for computers entirely
B) Allowing teams to access and share work from any location
C) Requiring all staff to be in one office
D) Printing all documents physically

**Correct Answer: B**

### *Pay-per-use Model*

**Q61. What does the pay-per-use model in cloud computing mean?**

A) Users pay a fixed fee regardless of usage
B) Users pay only for the resources they actually consume
C) Services are always free
D) Users must buy hardware upfront

**Correct Answer: B**

**Q62. The pay-per-use model is similar to:**

A) Paying a flat rate for unlimited electricity
B) Paying an electricity bill based on actual consumption
C) Getting free electricity forever
D) Building your own power plant

**Correct Answer: B**

**Q63. Which pricing model charges cloud users based on consumption?**

A) Subscription only
B) Pay-as-you-go
C) One-time purchase
D) Free trial forever

**Correct Answer: B**

**Q64. A company using cloud computing for seasonal sales peaks benefits from pay-per-use because:**

A) They pay the same every month
B) They pay more only during high usage periods and less during low periods
C) They get unlimited free resources during peaks
D) They must buy extra hardware for every peak

**Correct Answer: B**

**Q65. In the pay-per-use model, when you stop using a cloud resource:**

A) You continue paying the full price
B) You stop being charged for that resource
C) Your account is deleted
D) Your data is immediately erased

**Correct Answer: B**

**Q66. Pay-per-use cloud pricing helps startups because:**

A) They need to invest millions upfront
B) They can start with low costs and scale as they grow
C) They get free service forever
D) Cloud providers give them equity

**Correct Answer: B**

**Q67. Which cloud pricing metric charges based on compute hours used?**

A) Cost per API call only
B) Per-hour or per-second billing for virtual machines
C) Monthly flat rate regardless of use
D) Annual license fee

**Correct Answer: B**

**Q68. The pay-per-use model converts IT spending from:**

A) OpEx to CapEx
B) CapEx to OpEx
C) Revenue to loss
D) Profit to debt

**Correct Answer: B**

**Q69. In a pay-per-use model, storage costs depend on:**

A) The color of the data center
B) The amount of data stored
C) The brand of the computer
D) The user's location only

**Correct Answer: B**

**Q70. Which statement about pay-per-use is FALSE?**

A) Users are billed based on resource consumption
B) It reduces waste of computing resources
C) Users must always pay for maximum capacity even if not used
D) It allows flexible budgeting

**Correct Answer: C**

**Q71. Metered services in cloud computing allow providers to:**

A) Give unlimited free resources
B) Track and bill based on actual resource usage
C) Ignore user consumption patterns
D) Charge a random amount each month

**Correct Answer: B**

**Q72. AWS charges for EC2 instances based on:**

A) The weight of the server
B) Hours or seconds of usage
C) The color of the console
D) A fixed monthly fee only

**Correct Answer: B**

**Q73. The pay-per-use model encourages:**

A) Wasteful use of resources
B) Efficient use of computing resources
C) Buying unnecessary hardware
D) Running idle servers continuously

**Correct Answer: B**

**Q74. Which is an advantage of pay-per-use over traditional IT purchasing?**

A) Higher initial costs
B) No wasted investment on unused capacity
C) Requires longer procurement cycles
D) Fixed costs regardless of demand

**Correct Answer: B**

**Q75. In cloud computing, bandwidth charges are typically based on:**

A) The number of employees in a company
B) The amount of data transferred
C) The physical size of the building
D) The age of the company

**Correct Answer: B**

### *Remote Access Concept*

**Q76. Remote access in cloud computing means:**

A) Accessing resources only from the server room
B) Accessing computing resources from any location via the internet
C) Using a TV remote control
D) Having no access to any resources

**Correct Answer: B**

**Q77. Which technology enables remote access to cloud applications?**

A) A physical key
B) Internet connectivity and web browsers
C) Landline telephone only
D) Telegraph

**Correct Answer: B**

**Q78. A remote worker accessing company files via the cloud needs:**

A) A physical connection to the office server
B) An internet connection and proper login credentials
C) A dedicated telephone line
D) A printed copy of all files

**Correct Answer: B**

**Q79. Remote access to cloud services is possible through:**

A) Web browsers and mobile apps
B) Only desktop computers
C) Only specific branded hardware
D) Paper-based requests only

**Correct Answer: A**

**Q80. Which of the following supports remote access in cloud computing?**

A) VPN and internet connectivity
B) Only direct cable connections
C) Only Bluetooth connections
D) Fax machines

**Correct Answer: A**

**Q81. A teacher accessing online grading tools from home uses:**

A) Cloud-based remote access
B) A local-only application
C) Floppy disk transfer
D) A typewriter

**Correct Answer: A**

**Q82. Device independence in cloud computing means:**

A) Only Apple devices can be used
B) Services can be accessed from any compatible device
C) Only one device can ever be used
D) Hardware must be identical for each user

**Correct Answer: B**

**Q83. Which is a security measure for cloud remote access?**

A) Sharing passwords publicly
B) Multi-factor authentication
C) Using no password at all
D) Writing passwords on sticky notes

**Correct Answer: B**

**Q84. Remote access has become essential due to:**

A) Decrease in internet usage
B) Rise of remote and hybrid work models
C) Decline of computing needs
D) Fewer people using technology

**Correct Answer: B**

**Q85. SSH and RDP are protocols used for:**

A) Sending postal mail
B) Remote access to computers and servers
C) Charging batteries
D) Food delivery services

**Correct Answer: B**

**Q86. A mobile app that syncs data across devices demonstrates:**

A) Local-only computing
B) Cloud-based remote access and synchronization
C) Manual data entry
D) Offline-only operation

**Correct Answer: B**

**Q87. Which of the following is a challenge of remote access?**

A) Too much physical exercise
B) Dependence on stable internet connectivity
C) Too many floppy disks
D) Excessive paper usage

**Correct Answer: B**

**Q88. Remote desktop software allows you to:**

A) Control another computer over a network
B) Only print documents remotely
C) Only send emails
D) Only browse the web

**Correct Answer: A**

**Q89. Thin client computing relies heavily on:**

A) Powerful local machines
B) Remote servers accessed via a network
C) Typewriters
D) Standalone calculators

**Correct Answer: B**

**Q90. Geo-redundancy in cloud supports remote access by:**

A) Storing data in only one location
B) Replicating data across multiple geographic regions
C) Deleting data when the user travels
D) Requiring users to visit data centers

**Correct Answer: B**

## Cloud Service Providers

### *Amazon Web Services (AWS)*

**Q91. AWS stands for:**

A) Advanced Web Systems
B) Amazon Web Services
C) Automatic Wired Solutions
D) Applied Wireless Standards

**Correct Answer: B**

**Q92. AWS is a cloud platform offered by:**

A) Microsoft
B) Google
C) Amazon
D) Apple

**Correct Answer: C**

**Q93. Which AWS service provides scalable virtual servers?**

A) Amazon S3
B) Amazon EC2
C) Amazon RDS
D) Amazon SNS

**Correct Answer: B**

**Q94. Amazon S3 is used for:**

A) Sending emails
B) Object storage in the cloud
C) Video calling
D) Word processing

**Correct Answer: B**

**Q95. AWS was launched in which year?**

A) 2000
B) 2006
C) 2010
D) 2015

**Correct Answer: B**

**Q96. EC2 in AWS stands for:**

A) Elastic Compute Cloud
B) Electronic Computer Core
C) External Cloud Connection
D) Enterprise Computing Center

**Correct Answer: A**

**Q97. Which AWS service is used for managed databases?**

A) EC2
B) Lambda
C) RDS
D) S3

**Correct Answer: C**

**Q98. AWS Lambda is an example of:**

A) IaaS
B) PaaS
C) Serverless computing
D) Hardware leasing

**Correct Answer: C**

**Q99. AWS operates data centers in multiple:**

A) Cities within one country only
B) Regions and availability zones worldwide
C) Single buildings
D) Home offices

**Correct Answer: B**

**Q100. Which service in AWS provides content delivery?**

A) CloudFront
B) CloudWatch
C) CloudTrail
D) CloudFormation

**Correct Answer: A**

**Q101. S3 in Amazon S3 stands for:**

A) Simple Storage Service
B) Secure Server System
C) Standard Storage Solution
D) Smart Server Service

**Correct Answer: A**

**Q102. AWS provides how many service categories approximately?**

A) Less than 10
B) Over 200
C) Exactly 5
D) Over 1000

**Correct Answer: B**

**Q103. Amazon VPC in AWS provides:**

A) A virtual private cloud network
B) A video processing center
C) A visual programming console
D) A virus protection client

**Correct Answer: A**

**Q104. AWS is known as the largest provider because:**

A) It was the first major public cloud platform with the widest market share
B) It is the cheapest option always
C) It only serves the US market
D) It has no competitors

**Correct Answer: A**

**Q105. Which AWS service monitors cloud resources?**

A) CloudWatch
B) S3
C) EC2
D) Lambda

**Correct Answer: A**

**Q106. AWS IAM is used for:**

A) Image processing
B) Identity and Access Management
C) Internet Activity Monitoring
D) Infrastructure Automation Module

**Correct Answer: B**

**Q107. AWS Elastic Beanstalk is a service for:**

A) Data storage only
B) Easy deployment and scaling of web applications
C) Email management
D) Video editing

**Correct Answer: B**

**Q108. Which AWS service provides a NoSQL database?**

A) RDS
B) DynamoDB
C) Redshift
D) Aurora

**Correct Answer: B**

**Q109. AWS Free Tier allows new users to:**

A) Use unlimited services for free forever
B) Use certain services free for a limited time
C) Get free physical hardware
D) Avoid paying any bills ever

**Correct Answer: B**

**Q110. Route 53 in AWS is used for:**

A) Data warehousing
B) DNS and domain name management
C) File compression
D) Video streaming

**Correct Answer: B**

### *Microsoft Azure*

**Q111. Microsoft Azure is a:**

A) Hardware manufacturer
B) Cloud computing platform by Microsoft
C) Mobile operating system
D) Social media platform

**Correct Answer: B**

**Q112. Azure was initially launched under which name?**

A) Windows Live
B) Windows Azure
C) Microsoft Cloud
D) Azure Blue

**Correct Answer: B**

**Q113. Which programming languages does Azure support?**

A) Only C#
B) Only Java
C) Multiple languages including C#, Java, Python, and more
D) Only Python

**Correct Answer: C**

**Q114. Azure Virtual Machines provide:**

A) Physical servers delivered to your office
B) On-demand scalable computing resources in the cloud
C) Only storage solutions
D) Free hardware maintenance at home

**Correct Answer: B**

**Q115. Azure Blob Storage is used for:**

A) Sending emails
B) Storing large amounts of unstructured data
C) Video calling
D) Writing code

**Correct Answer: B**

**Q116. Which Azure service provides serverless computing?**

A) Azure Functions
B) Azure Blob
C) Azure SQL
D) Azure AD

**Correct Answer: A**

**Q117. Azure Active Directory (Azure AD) is used for:**

A) Storing images
B) Identity and access management
C) Website hosting only
D) Video editing

**Correct Answer: B**

**Q118. Azure integrates well with:**

A) Only Linux tools
B) Microsoft products like Office 365 and Windows Server
C) Only open-source tools
D) Apple products only

**Correct Answer: B**

**Q119. Azure DevOps provides tools for:**

A) Only testing
B) Only deployment
C) Software development lifecycle management
D) Only storage

**Correct Answer: C**

**Q120. Azure has data centers in approximately how many regions?**

A) 5 regions
B) Over 60 regions
C) Only 2 regions
D) Exactly 10 regions

**Correct Answer: B**

**Q121. Azure SQL Database is a:**

A) NoSQL database only
B) Managed relational database service in the cloud
C) Local file storage system
D) Spreadsheet application

**Correct Answer: B**

**Q122. Which Azure service provides AI and machine learning capabilities?**

A) Azure Cognitive Services
B) Azure Blob Storage
C) Azure VPN
D) Azure DNS

**Correct Answer: A**

**Q123. Azure Cosmos DB is a:**

A) Relational database only
B) Globally distributed multi-model database service
C) Local file manager
D) Web browser

**Correct Answer: B**

**Q124. Azure Kubernetes Service (AKS) is used for:**

A) Email management
B) Managing containerized applications
C) Photo editing
D) Word processing

**Correct Answer: B**

**Q125. Azure App Service allows you to build and host:**

A) Only static websites
B) Web apps, REST APIs, and mobile backends
C) Only databases
D) Only desktop applications

**Correct Answer: B**

**Q126. Microsoft Azure offers a free tier that includes:**

A) Unlimited resources forever
B) Selected services free for 12 months and some always-free services
C) Only paid services
D) Free physical hardware delivery

**Correct Answer: B**

**Q127. Azure Monitor is used to:**

A) Delete virtual machines
B) Collect and analyze telemetry data from cloud resources
C) Create social media posts
D) Design hardware blueprints

**Correct Answer: B**

**Q128. Which company acquired GitHub and integrated it with Azure?**

A) Google
B) Amazon
C) Microsoft
D) Facebook

**Correct Answer: C**

### *Difference: AWS vs Azure*

**Q129. Both AWS and Azure are examples of:**

A) Operating systems
B) Cloud computing platforms
C) Programming languages
D) Web browsers

**Correct Answer: B**

**Q130. AWS was launched in 2006 while Azure was launched in:**

A) 2005
B) 2008
C) 2010
D) 2015

**Correct Answer: C**

**Q131. Which cloud provider has the largest global market share?**

A) Google Cloud
B) Microsoft Azure
C) AWS
D) IBM Cloud

**Correct Answer: C**

**Q132. Azure integrates deeply with Microsoft products while AWS integrates with:**

A) Only Apple products
B) A broad ecosystem of third-party and open-source tools
C) Only IBM tools
D) No other tools

**Correct Answer: B**

**Q133. For virtual machines, AWS uses EC2 while Azure uses:**

A) Azure Virtual Machines
B) Azure Blob
C) Azure DNS
D) Azure AD

**Correct Answer: A**

**Q134. AWS S3 is equivalent to which Azure service for object storage?**

A) Azure SQL
B) Azure Blob Storage
C) Azure AD
D) Azure Functions

**Correct Answer: B**

**Q135. AWS Lambda is equivalent to which Azure service?**

A) Azure Blob
B) Azure Functions
C) Azure SQL
D) Azure VPN

**Correct Answer: B**

**Q136. Which statement is TRUE about AWS and Azure?**

A) Both offer pay-as-you-go pricing
B) Only AWS offers pay-as-you-go
C) Only Azure offers pay-as-you-go
D) Neither offers pay-as-you-go

**Correct Answer: A**

**Q137. Azure is often preferred by organizations already using:**

A) Linux exclusively
B) Microsoft enterprise products like Office 365
C) Only open-source software
D) No existing software

**Correct Answer: B**

**Q138. Which provider typically leads in hybrid cloud solutions?**

A) AWS
B) Microsoft Azure
C) IBM Cloud
D) Oracle Cloud

**Correct Answer: B**

**Q139. For machine learning, AWS offers SageMaker, while Azure offers:**

A) Azure Machine Learning
B) Azure Blob
C) Azure VPN
D) Azure DNS

**Correct Answer: A**

**Q140. Both AWS and Azure offer:**

A) Only IaaS
B) Only SaaS
C) IaaS, PaaS, and SaaS services
D) Only PaaS

**Correct Answer: C**

**Q141. AWS has more total services while Azure is known for better:**

A) Gaming performance
B) Integration with enterprise Microsoft ecosystems
C) Musical instrument sales
D) Physical server delivery

**Correct Answer: B**

**Q142. For DNS services, AWS uses Route 53 while Azure uses:**

A) Azure DNS
B) Azure AD
C) Azure Blob
D) Azure ML

**Correct Answer: A**

**Q143. Both AWS and Azure provide global content delivery through:**

A) Postal services
B) CDN services (CloudFront / Azure CDN)
C) Radio broadcasting
D) Satellite TV

**Correct Answer: B**

## Cloud Service Models

### *SaaS - Definition*

**Q144. SaaS stands for:**

A) Software as a Service
B) System as a Solution
C) Storage as a Server
D) Security as a Standard

**Correct Answer: A**

**Q145. In the SaaS model, the software is:**

A) Installed on each user's local computer
B) Hosted and managed by the provider and accessed over the internet
C) Available only on CDs
D) Free and unmanaged

**Correct Answer: B**

**Q146. Who is responsible for maintaining the software in a SaaS model?**

A) The end user
B) The cloud service provider
C) The hardware vendor
D) The internet service provider

**Correct Answer: B**

**Q147. SaaS applications are accessed through:**

A) Physical installation discs
B) A web browser over the internet
C) USB drives only
D) Fax machines

**Correct Answer: B**

**Q148. Which of the following is a characteristic of SaaS?**

A) Users manage the underlying infrastructure
B) Automatic updates managed by the provider
C) Requires manual installation on each device
D) No internet connection needed

**Correct Answer: B**

**Q149. In SaaS, users typically pay through:**

A) One-time purchase only
B) A subscription model
C) Free forever
D) Barter system

**Correct Answer: B**

**Q150. SaaS is often described as:**

A) On-demand software
B) On-premise hardware
C) Physical installation kit
D) Offline-only program

**Correct Answer: A**

**Q151. Which layer of cloud service gives users the LEAST control over infrastructure?**

A) IaaS
B) PaaS
C) SaaS
D) None of these

**Correct Answer: C**

**Q152. SaaS runs on the provider's:**

A) User's local machine only
B) Cloud infrastructure
C) Floppy disks
D) Physical store shelves

**Correct Answer: B**

**Q153. Multi-tenancy in SaaS means:**

A) Only one user can use the software
B) Multiple customers share the same software instance
C) Each user gets a separate physical server
D) Software runs on the user's phone only

**Correct Answer: B**

**Q154. Which is NOT a benefit of SaaS?**

A) Lower upfront costs
B) Automatic updates
C) Complete control over server hardware
D) Accessibility from any device

**Correct Answer: C**

**Q155. SaaS eliminates the need for users to:**

A) Use any device
B) Install and run applications on their own computers
C) Have an internet connection
D) Have a username

**Correct Answer: B**

**Q156. SaaS is positioned at which layer of cloud computing?**

A) Infrastructure layer
B) Platform layer
C) Application layer
D) Network layer

**Correct Answer: C**

### *SaaS Examples*

**Q157. Which of the following is a SaaS application?**

A) Google Workspace (Gmail, Docs)
B) Windows 10 OS
C) A USB drive
D) A motherboard

**Correct Answer: A**

**Q158. Salesforce is an example of:**

A) IaaS
B) PaaS
C) SaaS
D) Hardware

**Correct Answer: C**

**Q159. Microsoft 365 (online) is an example of:**

A) SaaS
B) IaaS
C) PaaS
D) On-premise software only

**Correct Answer: A**

**Q160. Zoom video conferencing is a:**

A) Hardware product
B) SaaS application
C) PaaS platform
D) IaaS provider

**Correct Answer: B**

**Q161. Slack, used for team communication, is an example of:**

A) IaaS
B) PaaS
C) SaaS
D) Desktop OS

**Correct Answer: C**

**Q162. Dropbox, when used as a file-sharing app, operates as:**

A) Hardware
B) SaaS
C) IaaS
D) A physical disk

**Correct Answer: B**

**Q163. HubSpot CRM is an example of:**

A) SaaS
B) PaaS
C) IaaS
D) A local-only tool

**Correct Answer: A**

**Q164. Which of these email services is a SaaS product?**

A) Gmail
B) A local email client with no cloud
C) A fax machine
D) A typewriter

**Correct Answer: A**

**Q165. Adobe Creative Cloud (online tools) is an example of:**

A) IaaS
B) SaaS
C) Hardware
D) PaaS

**Correct Answer: B**

**Q166. Trello, a project management tool, is classified as:**

A) SaaS
B) PaaS
C) IaaS
D) Firmware

**Correct Answer: A**

**Q167. Which is an example of SaaS in HR management?**

A) Workday
B) Amazon EC2
C) Google App Engine
D) Microsoft Azure VMs

**Correct Answer: A**

**Q168. Canva, the online design tool, is an example of:**

A) SaaS
B) IaaS
C) PaaS
D) A printer driver

**Correct Answer: A**

**Q169. Google Meet is a SaaS product for:**

A) Hardware procurement
B) Video conferencing and communication
C) Operating system installation
D) Chip manufacturing

**Correct Answer: B**

### *PaaS - Definition*

**Q170. PaaS stands for:**

A) Platform as a Service
B) Program as a System
C) Processing as a Standard
D) Protocol as a Server

**Correct Answer: A**

**Q171. PaaS provides users with:**

A) Only raw storage
B) A platform to develop, run, and manage applications without managing infrastructure
C) Only pre-built applications
D) Physical hardware delivery

**Correct Answer: B**

**Q172. In PaaS, who manages the underlying infrastructure?**

A) The application user
B) The cloud service provider
C) The developer only
D) No one

**Correct Answer: B**

**Q173. PaaS is mainly used by:**

A) End users browsing the internet
B) Software developers building applications
C) Hardware technicians
D) Network cable installers

**Correct Answer: B**

**Q174. PaaS includes tools for:**

A) Only data storage
B) Application development, testing, and deployment
C) Only video editing
D) Only email sending

**Correct Answer: B**

**Q175. Which of the following is provided by PaaS?**

A) Development frameworks and runtime environments
B) Only physical servers
C) Only completed software applications
D) Only network cables

**Correct Answer: A**

**Q176. PaaS sits between which two cloud models?**

A) SaaS and hardware
B) IaaS and SaaS
C) FTP and HTTP
D) DNS and DHCP

**Correct Answer: B**

**Q177. A developer using PaaS does NOT need to worry about:**

A) Writing application code
B) Managing operating systems and server hardware
C) Designing the user interface
D) Testing the application logic

**Correct Answer: B**

**Q178. PaaS supports which type of software lifecycle activities?**

A) Only deployment
B) Only testing
C) Full lifecycle: building, testing, deploying, and managing
D) Only code review

**Correct Answer: C**

**Q179. Which statement about PaaS is TRUE?**

A) Users manage hardware directly
B) Users focus on application development while the provider manages the platform
C) PaaS has no cloud component
D) PaaS is the same as buying a laptop

**Correct Answer: B**

### *PaaS Examples*

**Q180. Google App Engine is an example of:**

A) SaaS
B) IaaS
C) PaaS
D) Hardware

**Correct Answer: C**

**Q181. Microsoft Azure App Service is an example of:**

A) SaaS
B) PaaS
C) IaaS
D) Network hardware

**Correct Answer: B**

**Q182. Heroku, used for deploying web apps, is a:**

A) SaaS product
B) PaaS platform
C) IaaS provider
D) Desktop application

**Correct Answer: B**

**Q183. Force.com by Salesforce is an example of:**

A) IaaS
B) PaaS
C) SaaS
D) Firmware

**Correct Answer: B**

**Q184. AWS Elastic Beanstalk is classified as:**

A) SaaS
B) PaaS
C) IaaS
D) A physical server

**Correct Answer: B**

**Q185. Red Hat OpenShift is an example of:**

A) IaaS
B) PaaS
C) SaaS
D) A CPU brand

**Correct Answer: B**

**Q186. SAP Cloud Platform is a well-known:**

A) IaaS provider
B) PaaS provider
C) Email service
D) Printer manufacturer

**Correct Answer: B**

**Q187. IBM Cloud Foundry is an example of:**

A) PaaS
B) IaaS
C) SaaS
D) A web browser

**Correct Answer: A**

**Q188. Oracle Cloud Infrastructure Application Development is an example of:**

A) SaaS
B) IaaS
C) PaaS
D) Hardware

**Correct Answer: C**

**Q189. Which of the following is a PaaS for building mobile and web apps?**

A) Firebase by Google
B) Amazon S3
C) Microsoft Word
D) VLC Media Player

**Correct Answer: A**

### *IaaS - Definition*

**Q190. IaaS stands for:**

A) Infrastructure as a Service
B) Internet as a System
C) Installation as a Standard
D) Integration as a Solution

**Correct Answer: A**

**Q191. IaaS provides users with:**

A) Only ready-made applications
B) Virtualized computing resources like servers, storage, and networking
C) Only development platforms
D) Only email services

**Correct Answer: B**

**Q192. In IaaS, who manages the physical hardware?**

A) The end user
B) The cloud provider
C) The application developer
D) No one

**Correct Answer: B**

**Q193. IaaS gives the user the MOST control over:**

A) Nothing
B) Infrastructure components like OS, storage, and networking
C) Only the application interface
D) Only the web browser

**Correct Answer: B**

**Q194. Which of the following is a responsibility of the IaaS user?**

A) Managing physical data centers
B) Installing and configuring operating systems and applications
C) Manufacturing server hardware
D) Building data center cooling systems

**Correct Answer: B**

**Q195. IaaS is ideal for organizations that want:**

A) No control over computing resources
B) Full control over infrastructure without owning physical hardware
C) Only pre-built software
D) Only email hosting

**Correct Answer: B**

**Q196. IaaS provides resources on a:**

A) Fixed permanent basis only
B) Pay-as-you-go or on-demand basis
C) Free-forever basis
D) Physical delivery basis

**Correct Answer: B**

**Q197. Which cloud model gives the most flexibility and control to users?**

A) SaaS
B) PaaS
C) IaaS
D) None

**Correct Answer: C**

**Q198. Amazon EC2 is an example of IaaS because it provides:**

A) Ready-made applications
B) Virtual servers that users configure themselves
C) Only document editing
D) Pre-built CRM software

**Correct Answer: B**

**Q199. In IaaS, the user is responsible for everything EXCEPT:**

A) Operating system management
B) Physical hardware maintenance and data center operations
C) Application deployment
D) Network configuration within their virtual environment

**Correct Answer: B**

### *Difference: SaaS vs PaaS vs IaaS*

**Q200. Which cloud model is best for end users who just want to use software?**

A) IaaS
B) PaaS
C) SaaS
D) All equally

**Correct Answer: C**

**Q201. Which cloud model is best for developers building applications?**

A) SaaS
B) PaaS
C) IaaS
D) None

**Correct Answer: B**

**Q202. Which cloud model gives the MOST control to the user?**

A) SaaS
B) PaaS
C) IaaS
D) All give equal control

**Correct Answer: C**

**Q203. Which cloud model requires the LEAST technical knowledge from the user?**

A) IaaS
B) PaaS
C) SaaS
D) All require equal knowledge

**Correct Answer: C**

**Q204. In which model does the provider manage everything including the application?**

A) IaaS
B) PaaS
C) SaaS
D) None

**Correct Answer: C**

**Q205. The correct order from most provider-managed to most user-managed is:**

A) IaaS -> PaaS -> SaaS
B) SaaS -> PaaS -> IaaS
C) PaaS -> SaaS -> IaaS
D) SaaS -> IaaS -> PaaS

**Correct Answer: B**

**Q206. Gmail (SaaS) differs from AWS EC2 (IaaS) in that:**

A) Gmail gives users full control over servers
B) EC2 gives users full control over virtual servers while Gmail only provides email service
C) Both are identical in function
D) Neither uses the cloud

**Correct Answer: B**

**Q207. A company wanting to rent virtual servers should choose:**

A) SaaS
B) PaaS
C) IaaS
D) FaaS

**Correct Answer: C**

**Q208. A company wanting ready-made project management software should choose:**

A) IaaS
B) PaaS
C) SaaS
D) On-premise hardware

**Correct Answer: C**

**Q209. PaaS differs from IaaS in that PaaS additionally provides:**

A) Physical servers
B) Development tools, middleware, and runtime environments
C) Only storage
D) Only networking

**Correct Answer: B**

## Cloud Deployment Models

### *Public Cloud*

**Q210. A public cloud is operated by:**

A) A single private company for its own use only
B) A third-party provider and shared among multiple organizations
C) Only government agencies
D) A single user at home

**Correct Answer: B**

**Q211. Which is a characteristic of a public cloud?**

A) Resources are shared among multiple tenants
B) Only one company can use it
C) It has no internet connectivity
D) It requires physical presence at the data center

**Correct Answer: A**

**Q212. AWS, Azure, and Google Cloud are examples of:**

A) Private clouds
B) Hybrid clouds
C) Public clouds
D) Community clouds

**Correct Answer: C**

**Q213. In a public cloud, infrastructure costs are:**

A) Borne entirely by each user separately
B) Shared among all users, reducing individual costs
C) Free for everyone always
D) Not applicable

**Correct Answer: B**

**Q214. Public cloud services are accessible via:**

A) Private cables only
B) The public internet
C) Carrier pigeons
D) Postal mail

**Correct Answer: B**

**Q215. Which is an advantage of public cloud?**

A) No scalability
B) High upfront hardware investment
C) Low cost and high scalability
D) Limited availability

**Correct Answer: C**

**Q216. Public clouds are best suited for:**

A) Highly confidential military data only
B) General-purpose workloads and applications with variable demand
C) Applications that never need the internet
D) Single-user desktop operations only

**Correct Answer: B**

**Q217. In a public cloud, maintenance of hardware is done by:**

A) The end user
B) The cloud service provider
C) The local ISP
D) Nobody

**Correct Answer: B**

**Q218. A disadvantage of public cloud is:**

A) Lower cost than private cloud
B) Less control over data and security compared to private cloud
C) Too much control given to users
D) No availability concerns

**Correct Answer: B**

**Q219. Multi-tenancy in public cloud means:**

A) Only one customer uses the infrastructure
B) Multiple customers share the same physical infrastructure
C) Each customer has a dedicated building
D) No customers use the infrastructure

**Correct Answer: B**

**Q220. Public cloud pricing is typically:**

A) Fixed annual fee with no flexibility
B) Pay-as-you-go based on usage
C) Completely free always
D) Based on company size only

**Correct Answer: B**

**Q221. A startup with limited budget would likely choose:**

A) Building its own data center
B) Public cloud for its low initial cost
C) No cloud at all
D) A mainframe computer

**Correct Answer: B**

**Q222. Public cloud resources can be scaled:**

A) Only downward
B) Rapidly up or down as needed
C) Never
D) Only once per year

**Correct Answer: B**

**Q223. Which compliance concern exists with public clouds?**

A) Data may be stored in different geographic regions
B) Data is always in the same building as the user
C) No security measures are in place
D) Public clouds do not store any data

**Correct Answer: A**

**Q224. Public clouds offer high availability through:**

A) Single server deployment
B) Redundant infrastructure across multiple data centers
C) Handwritten backup systems
D) One backup per decade

**Correct Answer: B**

### *Private Cloud*

**Q225. A private cloud is used by:**

A) The general public
B) A single organization exclusively
C) Any random user
D) Multiple competing companies together

**Correct Answer: B**

**Q226. Private clouds offer greater:**

A) Cost savings than public cloud always
B) Control over security and data
C) Number of users
D) Internet speed

**Correct Answer: B**

**Q227. Private cloud infrastructure can be hosted:**

A) Only on-premises
B) Only off-premises
C) On-premises or by a third-party provider for exclusive use
D) Only in public data centers

**Correct Answer: C**

**Q228. Which industry commonly uses private cloud for data compliance?**

A) Fast food restaurants
B) Banking and healthcare
C) Toy manufacturing
D) Agriculture only

**Correct Answer: B**

**Q229. A private cloud is more expensive than public cloud because:**

A) It uses cheaper hardware
B) The organization bears the full cost of infrastructure
C) It has no cost at all
D) Public cloud providers subsidize it

**Correct Answer: B**

**Q230. OpenStack is a platform used to build:**

A) Public clouds only
B) Private clouds
C) Mobile apps
D) Video games

**Correct Answer: B**

**Q231. VMware vSphere is commonly used in:**

A) Public cloud only
B) Private cloud environments
C) Social media
D) Web browsers

**Correct Answer: B**

**Q232. A private cloud provides better:**

A) Multi-tenancy
B) Customization and control
C) Free services
D) Public accessibility

**Correct Answer: B**

**Q233. Data sovereignty concerns are better addressed by:**

A) Public cloud
B) Private cloud
C) No cloud
D) Shared hosting with strangers

**Correct Answer: B**

**Q234. Private cloud is suitable for organizations with:**

A) No data at all
B) Strict regulatory and compliance requirements
C) No budget for IT
D) Very few employees only

**Correct Answer: B**

**Q235. In a private cloud, who manages the infrastructure?**

A) Any random person
B) The organization's IT team or a dedicated provider
C) End users with no IT knowledge
D) The general public

**Correct Answer: B**

**Q236. A key disadvantage of private cloud is:**

A) High security
B) Greater control
C) Higher cost and complexity to manage
D) Better compliance

**Correct Answer: C**

**Q237. Private cloud can be managed using:**

A) Only manual processes
B) Automation tools like VMware, OpenStack, or Hyper-V
C) Only paper records
D) Only fax machines

**Correct Answer: B**

**Q238. Which of the following is NOT a feature of private cloud?**

A) Dedicated resources for one organization
B) Shared infrastructure with the public
C) Enhanced security controls
D) Customizable configurations

**Correct Answer: B**

**Q239. Government agencies often prefer private cloud for:**

A) Lower costs
B) Enhanced data security and compliance
C) Faster internet
D) Free services

**Correct Answer: B**

### *Hybrid Cloud*

**Q240. A hybrid cloud combines:**

A) Only public clouds
B) Only private clouds
C) Both public and private cloud environments
D) No cloud at all

**Correct Answer: C**

**Q241. The main advantage of a hybrid cloud is:**

A) It is always free
B) Flexibility to move workloads between public and private environments
C) It has no internet requirement
D) It only works offline

**Correct Answer: B**

**Q242. In a hybrid cloud, sensitive data can be kept in the:**

A) Public cloud only
B) Private cloud while less-sensitive workloads run on the public cloud
C) Neither public nor private
D) On paper only

**Correct Answer: B**

**Q243. Cloud bursting is a concept related to:**

A) Private cloud only
B) Hybrid cloud
C) Public cloud only
D) No cloud

**Correct Answer: B**

**Q244. Cloud bursting means:**

A) A cloud server physically exploding
B) An application running in a private cloud bursts into the public cloud during demand spikes
C) Deleting all cloud data
D) Shutting down all servers

**Correct Answer: B**

**Q245. A hospital might use hybrid cloud to keep patient records private while using public cloud for:**

A) Storing genetic data publicly
B) General website hosting and non-sensitive applications
C) Nothing at all
D) Sharing patient data with everyone

**Correct Answer: B**

**Q246. Hybrid cloud offers a balance between:**

A) Cost and no computing at all
B) Security of private cloud and scalability of public cloud
C) Speed and no internet
D) Free storage and paid hardware

**Correct Answer: B**

**Q247. Orchestration in hybrid cloud refers to:**

A) Playing musical instruments
B) Coordinating workloads across public and private clouds
C) Only managing public cloud
D) Only managing hardware

**Correct Answer: B**

**Q248. Which company offers Azure Arc for hybrid cloud management?**

A) Amazon
B) Google
C) Microsoft
D) IBM

**Correct Answer: C**

**Q249. AWS Outposts enables hybrid cloud by:**

A) Deleting all public cloud data
B) Extending AWS infrastructure to on-premises environments
C) Removing all cloud services
D) Only providing software updates

**Correct Answer: B**

**Q250. A hybrid cloud strategy requires careful management of:**

A) Only one environment
B) Data movement, security, and compliance across environments
C) Paper records only
D) Only local area networks

**Correct Answer: B**

**Q251. Which is a challenge of hybrid cloud?**

A) Too much simplicity
B) Complexity in managing multiple environments
C) No cost involved
D) Too few options

**Correct Answer: B**

**Q252. A retail company using private cloud for payment processing and public cloud for website hosting is using:**

A) Public cloud only
B) Private cloud only
C) Hybrid cloud
D) No cloud

**Correct Answer: C**

**Q253. Hybrid cloud helps organizations avoid:**

A) Using any technology
B) Vendor lock-in by distributing workloads
C) Using the internet
D) Having any security

**Correct Answer: B**

**Q254. Inter-cloud connectivity in hybrid cloud is typically achieved via:**

A) Postal mail
B) VPN, dedicated connections, or APIs
C) Fax only
D) Physical delivery of hard drives

**Correct Answer: B**

### *Use-case Based Differences*

**Q255. A small blog website with variable traffic is best suited for:**

A) Private cloud
B) Public cloud
C) No cloud
D) Mainframe computer

**Correct Answer: B**

**Q256. A defense organization handling classified data should prefer:**

A) Public cloud
B) Private cloud
C) Social media servers
D) Shared hosting

**Correct Answer: B**

**Q257. An e-commerce company with seasonal traffic spikes should consider:**

A) Only private cloud
B) Only public cloud
C) Hybrid cloud
D) No cloud at all

**Correct Answer: C**

**Q258. A research university sharing public datasets while securing proprietary research should use:**

A) Public cloud only
B) Private cloud only
C) Hybrid cloud
D) Community cloud

**Correct Answer: C**

**Q259. For rapid prototyping of new applications, which cloud is most cost-effective?**

A) Private cloud
B) Public cloud
C) No cloud
D) Dedicated hardware

**Correct Answer: B**

**Q260. A financial institution needing strict data residency compliance would prefer:**

A) Public cloud
B) Private or hybrid cloud
C) Social media hosting
D) Free hosting

**Correct Answer: B**

**Q261. A global media streaming company needing massive scalability would primarily use:**

A) Private cloud only
B) Public cloud
C) Physical DVD distribution
D) Local servers only

**Correct Answer: B**

**Q262. A healthcare company needing to store sensitive patient data while using cloud analytics should use:**

A) Public cloud for everything
B) Private cloud for everything
C) Hybrid cloud
D) No cloud at all

**Correct Answer: C**

**Q263. For disaster recovery, a company might replicate private cloud data to:**

A) Nowhere
B) A public cloud region
C) A printed backup
D) A single USB drive

**Correct Answer: B**

**Q264. Community cloud is used by organizations with:**

A) Nothing in common
B) Shared concerns such as compliance or industry regulations
C) Competing business interests
D) No computing needs

**Correct Answer: B**

## Virtualization & Architecture

### *Virtualization Definition*

**Q265. Virtualization is the process of creating a:**

A) Physical copy of hardware
B) Virtual version of something such as a server, storage, or network
C) Paper model of a computer
D) Wooden replica of a server

**Correct Answer: B**

**Q266. Virtualization allows multiple operating systems to run on:**

A) Multiple separate physical machines each
B) A single physical machine simultaneously
C) No machine at all
D) Only mobile phones

**Correct Answer: B**

**Q267. Which of the following is a benefit of virtualization?**

A) Increased hardware purchase costs
B) Better utilization of physical hardware resources
C) Slower performance always
D) More physical servers needed

**Correct Answer: B**

**Q268. Server virtualization divides a single physical server into:**

A) Smaller physical servers
B) Multiple isolated virtual servers
C) Paper copies
D) Backup tapes

**Correct Answer: B**

**Q269. Virtualization helps reduce:**

A) Software quality
B) Hardware costs and physical space requirements
C) Internet speed
D) Data accuracy

**Correct Answer: B**

**Q270. Desktop virtualization allows users to:**

A) Access a virtual desktop environment hosted on a remote server
B) Use only physical keyboards
C) Avoid using any computer
D) Only print documents

**Correct Answer: A**

**Q271. Network virtualization combines:**

A) Physical cables into one cable
B) Hardware and software network resources into a single virtual network
C) Paper maps into a digital map
D) Only wireless signals

**Correct Answer: B**

**Q272. Storage virtualization pools physical storage from multiple devices into:**

A) One large physical disk
B) A single virtual storage unit managed centrally
C) A printed storage list
D) A filing cabinet

**Correct Answer: B**

**Q273. Virtualization is a foundational technology for:**

A) Traditional mainframe computing only
B) Cloud computing
C) Typewriter operations
D) Manual accounting

**Correct Answer: B**

**Q274. Which company is a major provider of virtualization software?**

A) Nokia
B) VMware
C) Kodak
D) Yamaha

**Correct Answer: B**

**Q275. Application virtualization allows an application to run in an environment:**

A) Separated from the underlying operating system's full installation
B) Only on the developer's machine
C) Only on super computers
D) Without electricity

**Correct Answer: A**

**Q276. Without virtualization, each workload typically requires:**

A) No hardware
B) Its own dedicated physical server
C) A pencil and paper
D) Only a monitor

**Correct Answer: B**

### *Hypervisor Definition*

**Q277. A hypervisor is software that:**

A) Deletes virtual machines
B) Creates and manages virtual machines on physical hardware
C) Only prints documents
D) Manufactures physical servers

**Correct Answer: B**

**Q278. Another name for a hypervisor is:**

A) Virtual Machine Monitor (VMM)
B) Virtual Private Network
C) Very Massive Memory
D) Visual Machine Module

**Correct Answer: A**

**Q279. A Type 1 hypervisor runs:**

A) On top of an existing operating system
B) Directly on the physical hardware (bare-metal)
C) Only in web browsers
D) Only on mobile phones

**Correct Answer: B**

**Q280. A Type 2 hypervisor runs:**

A) Directly on hardware
B) On top of an existing host operating system
C) Without any hardware
D) Only on embedded systems

**Correct Answer: B**

**Q281. VMware ESXi is an example of a:**

A) Type 2 hypervisor
B) Type 1 (bare-metal) hypervisor
C) Web browser
D) Programming language

**Correct Answer: B**

**Q282. Oracle VirtualBox is an example of a:**

A) Type 1 hypervisor
B) Type 2 hypervisor
C) Physical server
D) Network switch

**Correct Answer: B**

**Q283. Microsoft Hyper-V can function as a:**

A) Type 1 hypervisor
B) Web browser
C) Email client
D) Word processor

**Correct Answer: A**

**Q284. The hypervisor allocates physical resources such as CPU, memory, and storage to:**

A) Paper files
B) Each virtual machine
C) External USB drives only
D) The monitor display

**Correct Answer: B**

**Q285. KVM (Kernel-based Virtual Machine) is a hypervisor built into:**

A) Windows
B) macOS
C) Linux
D) MS-DOS

**Correct Answer: C**

**Q286. A hypervisor ensures that virtual machines are:**

A) All connected to each other insecurely
B) Isolated from each other for security and stability
C) Running only one at a time
D) Sharing all passwords

**Correct Answer: B**

**Q287. The hypervisor sits between:**

A) The user and the keyboard
B) The physical hardware and the virtual machines
C) The printer and the monitor
D) Two different buildings

**Correct Answer: B**

**Q288. Which is NOT a function of a hypervisor?**

A) Creating virtual machines
B) Allocating hardware resources to VMs
C) Manufacturing physical CPUs
D) Isolating virtual machines

**Correct Answer: C**

### *Role of Hypervisor in IaaS*

**Q289. In IaaS, the hypervisor enables providers to:**

A) Ship physical servers to customers
B) Partition physical servers into multiple virtual servers for different customers
C) Only send emails
D) Only store paper records

**Correct Answer: B**

**Q290. IaaS relies on hypervisors to deliver:**

A) Physical hardware to each customer
B) Scalable and isolated virtual computing resources
C) Only email services
D) Only website hosting

**Correct Answer: B**

**Q291. When a user creates a VM in AWS EC2, a hypervisor:**

A) Sends a physical machine to the user
B) Allocates virtual resources from a physical server
C) Prints a receipt
D) Does nothing

**Correct Answer: B**

**Q292. Multi-tenancy in IaaS is possible because hypervisors:**

A) Give everyone the same password
B) Isolate each customer's virtual machines on shared hardware
C) Merge all customer data together
D) Require each customer to own hardware

**Correct Answer: B**

**Q293. The hypervisor in IaaS ensures that one customer's workload:**

A) Affects all other customers
B) Does not impact other customers on the same physical host
C) Crashes the entire data center
D) Shares data with competitors

**Correct Answer: B**

**Q294. AWS uses a modified version of which hypervisor technology called Nitro?**

A) VMware ESXi
B) Xen/KVM-based
C) VirtualBox
D) Hyper-V

**Correct Answer: B**

**Q295. Azure uses which hypervisor for its IaaS offerings?**

A) VMware ESXi
B) Oracle VirtualBox
C) A customized version of Hyper-V
D) Parallels

**Correct Answer: C**

**Q296. The ability to rapidly create and destroy VMs in IaaS is enabled by:**

A) Manual hardware assembly
B) Hypervisor automation and orchestration
C) Paper order forms
D) Physical server delivery

**Correct Answer: B**

### *Single Physical Resource Sharing*

**Q297. Resource pooling in cloud computing means:**

A) One resource per one user always
B) Physical resources are shared among multiple users through virtualization
C) No resources are available
D) Each user has a separate building

**Correct Answer: B**

**Q298. A single physical server running 10 virtual machines demonstrates:**

A) Waste of resources
B) Efficient resource sharing through virtualization
C) Poor engineering
D) Data redundancy

**Correct Answer: B**

**Q299. CPU sharing among virtual machines is managed by:**

A) The user manually
B) The hypervisor
C) A paper schedule
D) The power supply

**Correct Answer: B**

**Q300. Memory overcommitment in virtualization allows:**

A) VMs to use more physical RAM than exists by using techniques like ballooning
B) Unlimited free memory for all
C) No memory usage at all
D) Physical RAM to grow automatically

**Correct Answer: A**

**Q301. Storage from one SAN can be shared among multiple VMs using:**

A) Physical division with a saw
B) Virtual disk allocation
C) Paper records
D) USB splitting

**Correct Answer: B**

**Q302. Network bandwidth on a physical NIC can be shared among VMs through:**

A) Cutting the cable into pieces
B) Virtual network interfaces and traffic shaping
C) Sending one packet at a time daily
D) Paper letter routing

**Correct Answer: B**

### *Virtual Machine Isolation*

**Q303. VM isolation ensures that:**

A) All VMs share the same memory space openly
B) A crash in one VM does not affect other VMs on the same host
C) All VMs must run the same operating system
D) VMs have no security boundaries

**Correct Answer: B**

**Q304. If one virtual machine gets a virus, isolation means:**

A) All VMs on the host get infected immediately
B) Other VMs on the same host should remain unaffected
C) The physical server explodes
D) All data everywhere is lost

**Correct Answer: B**

**Q305. VM isolation is critical for:**

A) Sharing passwords between VMs
B) Multi-tenant cloud environments where different customers share hardware
C) Running only one VM ever
D) Avoiding all technology

**Correct Answer: B**

**Q306. The hypervisor enforces isolation by:**

A) Giving all VMs admin access to the host
B) Restricting each VM's access to only its allocated resources
C) Turning off all security features
D) Connecting all VM networks together without firewalls

**Correct Answer: B**

**Q307. Memory isolation between VMs means:**

A) VMs can read each other's memory freely
B) Each VM can only access its own allocated memory
C) All memory is shared without protection
D) No VM has any memory

**Correct Answer: B**

**Q308. Network isolation between VMs can be achieved using:**

A) A single shared cable with no rules
B) VLANs, virtual switches, and firewall rules
C) No network equipment
D) Only physical cables

**Correct Answer: B**

## Utility & Grid Computing

### *Utility Computing Definition*

**Q309. Utility computing provides computing resources as a:**

A) Free unlimited service
B) Metered service similar to electricity or water
C) One-time purchase
D) Physical delivery product

**Correct Answer: B**

**Q310. The concept of utility computing is based on the idea of:**

A) Computing as a product you buy once
B) Computing as a utility you pay for based on usage
C) Free computing for all forever
D) Computing without any electricity

**Correct Answer: B**

**Q311. Utility computing was one of the precursors to modern:**

A) Typewriters
B) Cloud computing
C) Fax machines
D) Postal services

**Correct Answer: B**

**Q312. In utility computing, resources such as storage and compute are provided:**

A) On a fixed annual contract only
B) On demand and billed based on consumption
C) For free with no limits
D) Only through physical delivery

**Correct Answer: B**

**Q313. Utility computing aims to maximize:**

A) Hardware waste
B) Resource utilization and cost efficiency
C) Paper usage
D) Physical server count

**Correct Answer: B**

**Q314. Which term best describes the billing model of utility computing?**

A) Flat rate
B) Pay-per-use
C) Free tier only
D) Donation-based

**Correct Answer: B**

**Q315. Utility computing reduces the need for organizations to:**

A) Use any technology
B) Maintain large in-house data centers for peak capacity
C) Have any employees
D) Connect to any network

**Correct Answer: B**

**Q316. John McCarthy's vision of computing as a public utility anticipated:**

A) The elimination of computers
B) Modern cloud and utility computing
C) The end of electricity
D) Only mobile phones

**Correct Answer: B**

**Q317. Utility computing shares its billing philosophy with:**

A) Buying a car outright
B) Paying a monthly electricity bill based on usage
C) Getting free gasoline
D) Owning a power plant

**Correct Answer: B**

**Q318. Elasticity in utility computing means:**

A) Physical servers can stretch
B) Resources automatically scale based on demand
C) Cables become flexible
D) Hardware bends without breaking

**Correct Answer: B**

### *Pay-per-use Concept*

**Q319. In pay-per-use utility computing, customers are charged for:**

A) Resources they never use
B) Only the resources they actually consume
C) All resources in the data center
D) A random amount each month

**Correct Answer: B**

**Q320. Pay-per-use ensures that idle resources:**

A) Are still charged at full price to the user
B) Are not charged until they are actively used
C) Generate no revenue for the provider
D) Must be physically returned

**Correct Answer: B**

**Q321. The pay-per-use model benefits organizations with:**

A) Constant unchanging workloads only
B) Variable and unpredictable workloads
C) No computing needs
D) Only peak-time operations

**Correct Answer: B**

**Q322. Metering in utility computing is analogous to:**

A) A gas meter measuring consumption at home
B) Unlimited free buffet
C) A fixed salary
D) A lottery system

**Correct Answer: A**

**Q323. Which is a benefit of pay-per-use for small businesses?**

A) They must buy expensive servers upfront
B) They pay only for what they use, keeping costs low
C) They get unlimited free services
D) They cannot access any computing

**Correct Answer: B**

### *Grid Computing Definition*

**Q324. Grid computing involves:**

A) A single powerful computer doing all work
B) Multiple networked computers working together on large tasks
C) Only one computer with no network
D) A physical grid of solar panels

**Correct Answer: B**

**Q325. Grid computing distributes tasks across:**

A) A single processor
B) Many geographically dispersed computers
C) Only one building
D) Paper-based systems

**Correct Answer: B**

**Q326. The primary goal of grid computing is to:**

A) Use only one computer for everything
B) Harness unused computing power from multiple machines for complex problems
C) Eliminate all computers
D) Replace the internet

**Correct Answer: B**

**Q327. SETI@home was a famous example of grid computing that:**

A) Sold computers
B) Used volunteer computers worldwide to analyze radio signals from space
C) Built physical telescopes
D) Replaced internet servers

**Correct Answer: B**

**Q328. Grid computing enables solving problems that are too large for:**

A) Any computer regardless of size
B) A single computer or small cluster
C) The entire internet
D) All computers combined

**Correct Answer: B**

**Q329. Grid computing uses middleware to:**

A) Physically connect cables
B) Coordinate tasks and manage resources across distributed computers
C) Manufacture hardware
D) Print documents

**Correct Answer: B**

**Q330. A computational grid is similar to:**

A) An electrical power grid distributing electricity
B) A traffic jam
C) A single wall outlet
D) A paper grid notebook

**Correct Answer: A**

**Q331. Grid computing was widely used in:**

A) Office word processing only
B) Scientific research and large-scale data analysis
C) Sending text messages
D) Social media posts

**Correct Answer: B**

**Q332. Globus Toolkit is a well-known:**

A) Word processor
B) Grid computing middleware
C) Photo editor
D) Email client

**Correct Answer: B**

**Q333. Grid computing can combine resources from:**

A) Only identical computers
B) Different types of computers and operating systems
C) Only Apple computers
D) Only Windows computers

**Correct Answer: B**

### *Heterogeneous Resources*

**Q334. Heterogeneous resources in grid computing means:**

A) All computers are identical
B) Computers with different hardware, OS, and configurations work together
C) No computers are used
D) Only brand-new computers are accepted

**Correct Answer: B**

**Q335. A grid computing system can include machines running:**

A) Only Windows
B) Only Linux
C) Different operating systems like Windows, Linux, and macOS
D) Only mainframes

**Correct Answer: C**

**Q336. Heterogeneity is a challenge in grid computing because:**

A) All systems are the same
B) Software must be compatible across different hardware and OS environments
C) No software is needed
D) Only one computer type exists

**Correct Answer: B**

**Q337. Grid middleware handles heterogeneity by:**

A) Requiring all computers to be identical
B) Providing a common interface that abstracts hardware differences
C) Throwing away non-matching computers
D) Using only one computer

**Correct Answer: B**

**Q338. A computational grid with Linux servers, Windows workstations, and macOS laptops is an example of:**

A) A homogeneous system
B) A heterogeneous grid
C) A local area network only
D) A single computer

**Correct Answer: B**

### *Geographically Dispersed Systems*

**Q339. Grid computing nodes can be located in:**

A) The same room only
B) Different cities, countries, or continents
C) A single building only
D) One data center only

**Correct Answer: B**

**Q340. The geographic distribution of grid nodes is connected via:**

A) Physical cables only in one building
B) Wide area networks and the internet
C) Paper mail
D) Radio waves only

**Correct Answer: B**

**Q341. A challenge of geographically dispersed grids is:**

A) All nodes being in the same place
B) Network latency between distant nodes
C) Too many nodes being too close
D) Identical time zones

**Correct Answer: B**

**Q342. International research projects use geographically dispersed grids to:**

A) Avoid using computers
B) Pool computing power from institutions worldwide
C) Send physical samples through the mail
D) Only communicate via fax

**Correct Answer: B**

**Q343. The European Grid Infrastructure connects:**

A) Only European businesses
B) Research institutions across Europe and beyond
C) Only American universities
D) No institutions at all

**Correct Answer: B**

### *Difference: Grid vs Cloud*

**Q344. Grid computing focuses on:**

A) On-demand scalable services
B) Distributed problem-solving across many heterogeneous machines
C) Selling ready-made software
D) Only email delivery

**Correct Answer: B**

**Q345. Cloud computing focuses on:**

A) Only scientific research
B) Delivering on-demand IT services over the internet
C) Only grid-based calculations
D) Only hardware manufacturing

**Correct Answer: B**

**Q346. Grid computing is typically used for:**

A) Consumer web applications
B) Large-scale scientific and research computations
C) Social media browsing
D) Online shopping only

**Correct Answer: B**

**Q347. Cloud computing is commonly used for:**

A) Only particle physics research
B) Business applications, storage, web hosting, and general-purpose IT
C) Only weather prediction
D) Only space exploration

**Correct Answer: B**

**Q348. In grid computing, resources are typically:**

A) Owned by a single provider
B) Contributed by multiple independent organizations
C) Purchased from a single vendor
D) Not used at all

**Correct Answer: B**

**Q349. In cloud computing, resources are typically owned and managed by:**

A) Multiple independent contributors
B) A single cloud service provider
C) No one at all
D) The end user exclusively

**Correct Answer: B**

**Q350. Grid computing predates cloud computing and was prominent in the:**

A) 1960s
B) 1990s and early 2000s
C) 2020s
D) 2030s

**Correct Answer: B**

**Q351. Cloud computing became mainstream in the:**

A) 1970s
B) 1990s
C) Late 2000s and 2010s
D) 1950s

**Correct Answer: C**

**Q352. Cloud provides virtualized resources while grid typically combines:**

A) Virtual machines only
B) Physical distributed machines into a unified computing resource
C) Only storage
D) Only networking

**Correct Answer: B**

**Q353. Which is more consumer-friendly and commercially available?**

A) Grid computing
B) Cloud computing
C) Neither
D) Both equally

**Correct Answer: B**

**Q354. SLA (Service Level Agreements) are a standard part of:**

A) Grid computing mainly
B) Cloud computing
C) Postal services
D) Neither

**Correct Answer: B**

**Q355. Scalability is more seamless and automatic in:**

A) Grid computing
B) Cloud computing
C) Both equally
D) Neither

**Correct Answer: B**

**Q356. Grid computing resources are often:**

A) Available 24/7 with guaranteed uptime
B) Voluntarily contributed and availability may vary
C) Always 100% reliable
D) Free of any latency

**Correct Answer: B**

**Q357. Cloud computing provides guaranteed uptime through:**

A) Volunteer computers
B) SLAs backed by redundant professional infrastructure
C) Hoping for the best
D) Single points of failure

**Correct Answer: B**

**Q358. Multi-tenancy is a core feature of:**

A) Grid computing
B) Cloud computing
C) Neither
D) Paper-based systems

**Correct Answer: B**

**Q359. Which statement is TRUE?**

A) Cloud replaced grid computing entirely
B) Grid computing concepts influenced cloud computing's development
C) Grid and cloud are exactly the same thing
D) Neither grid nor cloud uses the internet

**Correct Answer: B**

## SOA & Managed Services

### *Service-Oriented Architecture (SOA)*

**Q360. SOA stands for:**

A) Service-Oriented Architecture
B) System-Only Access
C) Secure Online Application
D) Standard Operating Algorithm

**Correct Answer: A**

**Q361. In SOA, applications are built as a collection of:**

A) Monolithic blocks
B) Loosely coupled services
C) Hardware components
D) Physical modules

**Correct Answer: B**

**Q362. SOA enables different services to communicate through:**

A) Physical cables only
B) Standardized protocols and interfaces
C) Paper messages
D) Voice commands only

**Correct Answer: B**

**Q363. A key principle of SOA is:**

A) Tight coupling between components
B) Loose coupling and reusability of services
C) No communication between services
D) Only one service allowed

**Correct Answer: B**

**Q364. SOA allows organizations to:**

A) Only use one software application forever
B) Integrate and reuse existing services across different applications
C) Avoid using any technology
D) Replace all software with hardware

**Correct Answer: B**

**Q365. Web services in SOA typically communicate using:**

A) Smoke signals
B) XML-based protocols like SOAP or REST
C) Morse code
D) Physical mail

**Correct Answer: B**

**Q366. SOAP in SOA stands for:**

A) Simple Object Access Protocol
B) Secure Online Application Platform
C) Standard Operating Access Point
D) System-Oriented Architecture Protocol

**Correct Answer: A**

**Q367. REST in the context of web services stands for:**

A) Really Easy Software Tool
B) Representational State Transfer
C) Remote Execution Standard Technique
D) Rapid Enterprise Service Technology

**Correct Answer: B**

**Q368. SOA promotes:**

A) Code duplication across all systems
B) Service reusability across multiple applications
C) One-time-use software
D) Hardware-only solutions

**Correct Answer: B**

**Q369. An enterprise service bus (ESB) in SOA is used to:**

A) Transport physical goods
B) Facilitate communication between different services
C) Drive data entry forms
D) Only send emails

**Correct Answer: B**

**Q370. Which of the following is a benefit of SOA?**

A) Increased dependency between systems
B) Improved flexibility and interoperability
C) More monolithic architectures
D) Less code reuse

**Correct Answer: B**

**Q371. SOA is the predecessor concept to modern:**

A) Typewriter technology
B) Microservices architecture
C) Manual accounting
D) Physical filing

**Correct Answer: B**

**Q372. Service discovery in SOA allows applications to:**

A) Find and connect to available services dynamically
B) Only use hardcoded connections
C) Avoid all network communication
D) Discover physical hardware locations

**Correct Answer: A**

**Q373. WSDL in SOA stands for:**

A) Web Services Description Language
B) Wide System Data Link
C) Wireless Service Delivery Layer
D) Web Standard Data Library

**Correct Answer: A**

**Q374. SOA helps legacy systems by:**

A) Replacing them entirely
B) Wrapping them as services that can communicate with newer systems
C) Deleting all old data
D) Ignoring them completely

**Correct Answer: B**

### *Managed IT Services*

**Q375. Managed IT services means:**

A) A company manages all IT internally with no help
B) A third-party provider manages and maintains IT systems on behalf of a client
C) IT services that are free forever
D) No IT services at all

**Correct Answer: B**

**Q376. A Managed Service Provider (MSP) typically handles:**

A) Only physical security guards
B) IT infrastructure, security, monitoring, and support for clients
C) Only catering services
D) Only marketing

**Correct Answer: B**

**Q377. Which of the following is a managed service?**

A) A company fixing its own printers internally
B) Outsourced 24/7 network monitoring by a third party
C) An employee personally managing their laptop
D) Using a personal calculator

**Correct Answer: B**

**Q378. Managed services help organizations:**

A) Increase internal IT workload
B) Focus on core business while experts handle IT operations
C) Avoid all technology entirely
D) Hire more hardware technicians locally

**Correct Answer: B**

**Q379. SLA in managed services stands for:**

A) Service Level Agreement
B) Standard Local Access
C) System Linked Authorization
D) Software License Activation

**Correct Answer: A**

**Q380. An SLA in managed services defines:**

A) The color of the servers
B) The expected performance, uptime, and responsibilities between provider and client
C) The physical location of all employees
D) The brand of coffee in the office

**Correct Answer: B**

**Q381. Proactive monitoring in managed IT services means:**

A) Waiting for problems to occur before fixing them
B) Continuously monitoring systems to detect and resolve issues before they escalate
C) Only checking systems once a year
D) No monitoring at all

**Correct Answer: B**

**Q382. Which is an example of a managed cloud service?**

A) AWS Managed Database Service (RDS)
B) A personal spreadsheet on your laptop
C) A handwritten ledger
D) A local calculator

**Correct Answer: A**

**Q383. Managed security services include:**

A) No security measures
B) Firewall management, intrusion detection, and threat monitoring
C) Only physical door locks
D) Only CCTV cameras

**Correct Answer: B**

**Q384. A benefit of managed IT services is:**

A) Higher overall costs always
B) Access to specialized expertise without hiring full-time staff
C) Less reliable systems
D) More work for internal teams

**Correct Answer: B**

### *Client-Server Model*

**Q385. In the client-server model, the client is:**

A) The computer that provides services
B) The computer or device that requests services
C) The internet connection itself
D) The power supply

**Correct Answer: B**

**Q386. In the client-server model, the server is:**

A) The device that only receives data
B) The computer that provides services and resources to clients
C) A monitor display
D) A keyboard

**Correct Answer: B**

**Q387. A web browser accessing a website is an example of:**

A) Peer-to-peer networking
B) Client-server architecture
C) No networking at all
D) Physical mail delivery

**Correct Answer: B**

**Q388. In client-server architecture, communication occurs over:**

A) Postal service
B) A computer network using protocols
C) Physical touch only
D) Paper notes

**Correct Answer: B**

**Q389. HTTP is a protocol used in client-server communication for:**

A) Power supply management
B) Web page requests and responses
C) Keyboard input only
D) Printer management only

**Correct Answer: B**

**Q390. A database server provides:**

A) Physical printing services
B) Data storage and retrieval services to client applications
C) Only email forwarding
D) Only display output

**Correct Answer: B**

**Q391. The client-server model is the basis for:**

A) Standalone calculators
B) Most internet and networked applications
C) Physical board games
D) Manual typewriters

**Correct Answer: B**

**Q392. A file server in a client-server network:**

A) Stores and manages files that clients can access
B) Only prints files
C) Only deletes files
D) Has no storage capability

**Correct Answer: A**

**Q393. A mail server handles:**

A) Physical postal mail
B) Sending, receiving, and storing email messages
C) Only web browsing
D) Only file storage

**Correct Answer: B**

**Q394. Client-server differs from peer-to-peer in that:**

A) All computers are equal in client-server
B) There are dedicated roles: clients request, servers provide
C) No network is used in client-server
D) Servers request services from clients

**Correct Answer: B**

## Client & GUI

### *Client Definition*

**Q395. In computing, a client is:**

A) A device or application that requests services from a server
B) A physical store customer
C) The power outlet in a wall
D) A type of programming language

**Correct Answer: A**

**Q396. A thin client depends heavily on:**

A) Its own processor for all tasks
B) A remote server for processing and storage
C) No external resources
D) Only battery power

**Correct Answer: B**

**Q397. A thick client (fat client) performs:**

A) No processing locally
B) Significant processing locally on the device
C) Only network functions
D) Only display functions

**Correct Answer: B**

**Q398. A web browser is an example of a:**

A) Server
B) Client application
C) Hardware device
D) Power supply

**Correct Answer: B**

**Q399. An email client like Outlook is called a client because it:**

A) Provides email services to others
B) Requests email services from a mail server
C) Manufactures hardware
D) Only displays images

**Correct Answer: B**

**Q400. A mobile app requesting data from a cloud API is functioning as a:**

A) Server
B) Client
C) Router
D) Switch

**Correct Answer: B**

**Q401. Client software typically provides:**

A) A user interface for interacting with services
B) No interface at all
C) Only hardware control
D) Only power management

**Correct Answer: A**

**Q402. In a client-server database system, the client application:**

A) Stores all the data itself
B) Sends queries to the database server and displays results
C) Has no connection to any server
D) Acts as the database engine

**Correct Answer: B**

**Q403. The term 'client' in IT does NOT refer to:**

A) A web browser on a user's machine
B) An app requesting data from a server
C) The physical building of a company
D) A thin client terminal

**Correct Answer: C**

**Q404. Zero client computing means:**

A) The client device has almost no local OS or storage
B) No clients exist at all
C) The server has zero clients connected
D) No computing takes place

**Correct Answer: A**

**Q405. A POS terminal in a shop connecting to a central server is a:**

A) Server
B) Client device
C) Router
D) Modem

**Correct Answer: B**

**Q406. Client-side processing happens on:**

A) The server only
B) The user's device
C) The cloud provider's headquarters
D) The ISP's office

**Correct Answer: B**

### *GUI Definition*

**Q407. GUI stands for:**

A) Graphical User Interface
B) General Utility Input
C) Global User Integration
D) Green Universal Interface

**Correct Answer: A**

**Q408. A GUI allows users to interact with a computer using:**

A) Only text commands
B) Visual elements like icons, buttons, and windows
C) Only voice commands
D) Physical switches only

**Correct Answer: B**

**Q409. Which operating system popularized the GUI?**

A) MS-DOS
B) Apple Macintosh and later Windows
C) Unix command line only
D) Linux terminal only

**Correct Answer: B**

**Q410. A GUI is an alternative to a:**

A) Mouse
B) Command-line interface (CLI)
C) Monitor
D) Internet connection

**Correct Answer: B**

**Q411. Which of the following is a GUI element?**

A) A text-only terminal prompt
B) A clickable button on screen
C) A punch card
D) A paper form

**Correct Answer: B**

**Q412. WIMP in GUI design stands for:**

A) Windows, Icons, Menus, Pointer
B) Wide Internet Main Protocol
C) Wireless Input Management Program
D) Web Interface Module Platform

**Correct Answer: A**

**Q413. A GUI makes computing more accessible because:**

A) Users need to memorize complex commands
B) Visual elements make interaction intuitive for non-technical users
C) It removes all visual elements
D) It requires advanced programming knowledge

**Correct Answer: B**

**Q414. Which company developed the first commercial GUI-based computer?**

A) IBM
B) Xerox (Xerox Alto)
C) Microsoft
D) Dell

**Correct Answer: B**

**Q415. A desktop icon in a GUI represents:**

A) Nothing
B) A shortcut to a file, folder, or application
C) Only decorative artwork
D) The pixel density of the screen

**Correct Answer: B**

**Q416. Scroll bars, checkboxes, and dropdown menus are examples of:**

A) CLI commands
B) GUI widgets or elements
C) Hardware components
D) Network protocols

**Correct Answer: B**

**Q417. The GUI on a smartphone includes:**

A) Only text prompts
B) Touch-based icons, swipe gestures, and visual menus
C) Only keyboard input
D) Only voice commands

**Correct Answer: B**

**Q418. A GUI requires which input devices?**

A) Only a printer
B) Mouse, keyboard, touchscreen, or similar pointing devices
C) Only a scanner
D) Only a microphone

**Correct Answer: B**

### *Application Layer Role*

**Q419. The application layer in the OSI model is responsible for:**

A) Physical cable management
B) Providing network services directly to end-user applications
C) Only routing packets
D) Only electrical signal transmission

**Correct Answer: B**

**Q420. The application layer is which layer of the OSI model?**

A) Layer 1
B) Layer 4
C) Layer 7
D) Layer 3

**Correct Answer: C**

**Q421. Which protocol operates at the application layer?**

A) TCP
B) IP
C) HTTP
D) Ethernet

**Correct Answer: C**

**Q422. FTP (File Transfer Protocol) operates at the:**

A) Physical layer
B) Data link layer
C) Application layer
D) Network layer

**Correct Answer: C**

**Q423. SMTP, used for sending emails, operates at the:**

A) Transport layer
B) Application layer
C) Physical layer
D) Session layer

**Correct Answer: B**

**Q424. DNS operates at the application layer to:**

A) Deliver physical mail
B) Translate domain names to IP addresses
C) Manage network cables
D) Regulate power supply

**Correct Answer: B**

**Q425. The application layer serves as the interface between:**

A) Hardware and electricity
B) The network and the user's application software
C) Two physical cables
D) The keyboard and mouse only

**Correct Answer: B**

**Q426. Web browsers interact with web servers at the:**

A) Physical layer
B) Transport layer
C) Application layer
D) Data link layer

**Correct Answer: C**

**Q427. HTTPS at the application layer provides:**

A) Only speed improvement
B) Secure encrypted communication for web traffic
C) Only audio streaming
D) Only file deletion

**Correct Answer: B**

**Q428. Telnet and SSH are application layer protocols for:**

A) Physical hardware testing
B) Remote login and command execution on distant computers
C) Power management
D) Disk formatting only

**Correct Answer: B**

**Q429. POP3 and IMAP at the application layer are used for:**

A) Routing network traffic
B) Retrieving emails from a mail server
C) Managing physical cables
D) Compressing video files

**Correct Answer: B**

**Q430. SNMP at the application layer is used for:**

A) Sending text messages
B) Network management and monitoring
C) Playing games
D) Printing documents

**Correct Answer: B**

### *Client-Server Interaction*

**Q431. In client-server interaction, the client typically initiates:**

A) Nothing
B) A request to the server
C) The server's hardware setup
D) The network cable connection

**Correct Answer: B**

**Q432. The server responds to the client with:**

A) The requested data or service
B) A physical package
C) A phone call
D) A postal letter

**Correct Answer: A**

**Q433. Request-response is the fundamental pattern of:**

A) Physical mail delivery
B) Client-server interaction
C) Power generation
D) Hardware manufacturing

**Correct Answer: B**

**Q434. When you type a URL in a browser, the browser sends an HTTP request to:**

A) Your printer
B) The web server hosting that website
C) Your keyboard
D) Your mouse

**Correct Answer: B**

**Q435. The web server processes the request and sends back:**

A) A physical document
B) An HTTP response (typically an HTML page)
C) A text message to your phone
D) An email

**Correct Answer: B**

**Q436. Stateless client-server interaction means:**

A) The server stores every client interaction permanently
B) Each request from the client is treated independently
C) The client and server share memory
D) No requests can be made

**Correct Answer: B**

**Q437. Cookies are used in web client-server interaction to:**

A) Bake digital cakes
B) Maintain state information between stateless HTTP requests
C) Delete all user data
D) Slow down the internet

**Correct Answer: B**

**Q438. An API allows client-server interaction through:**

A) Physical meetings
B) Defined methods and data formats for exchanging information
C) Only voice calls
D) Postal correspondence

**Correct Answer: B**

**Q439. Load balancing in client-server systems distributes:**

A) Physical weight of servers
B) Client requests across multiple servers to optimize performance
C) Electricity bills among employees
D) Paper documents among departments

**Correct Answer: B**

**Q440. In a three-tier architecture, the tiers are:**

A) Monitor, keyboard, mouse
B) Presentation (client), application logic, and database
C) Electricity, water, gas
D) Input, output, storage only

**Correct Answer: B**

## Memory

### *Primary Memory (RAM)*

**Q441. RAM stands for:**

A) Random Access Memory
B) Read All Memory
C) Run Application Module
D) Rapid Access Method

**Correct Answer: A**

**Q442. RAM is classified as:**

A) Secondary storage
B) Primary (main) memory
C) Output device
D) Input device

**Correct Answer: B**

**Q443. RAM is volatile, which means:**

A) Data is retained permanently
B) Data is lost when power is turned off
C) Data can never be written
D) Data is always encrypted

**Correct Answer: B**

**Q444. RAM provides:**

A) Permanent storage for files
B) Temporary fast storage for currently running programs and data
C) Only display output
D) Only sound output

**Correct Answer: B**

**Q445. Which type of RAM stores each bit in a tiny capacitor?**

A) SRAM
B) DRAM
C) ROM
D) Cache

**Correct Answer: B**

**Q446. SRAM (Static RAM) is:**

A) Slower than DRAM
B) Faster than DRAM but more expensive
C) Not a type of memory
D) A storage device

**Correct Answer: B**

**Q447. DRAM stands for:**

A) Dynamic Random Access Memory
B) Dual Read Application Module
C) Direct Resource Access Memory
D) Data Recovery Automated Method

**Correct Answer: A**

**Q448. More RAM in a computer generally means:**

A) Slower performance
B) Ability to run more programs simultaneously with better performance
C) More permanent storage
D) Louder operation

**Correct Answer: B**

**Q449. A common RAM capacity for modern PCs is:**

A) 64 KB
B) 512 KB
C) 8 GB or 16 GB
D) 1 byte

**Correct Answer: C**

**Q450. The CPU accesses data from RAM:**

A) Very slowly, taking minutes
B) Very quickly, in nanoseconds
C) Not at all
D) Only once per day

**Correct Answer: B**

**Q451. DDR in DDR RAM stands for:**

A) Double Data Rate
B) Dual Drive Reader
C) Direct Disk Recovery
D) Dynamic Data Resource

**Correct Answer: A**

**Q452. DDR4 and DDR5 are types of:**

A) Hard disk drives
B) RAM modules
C) Output devices
D) Operating systems

**Correct Answer: B**

**Q453. RAM sticks are typically inserted into:**

A) USB ports
B) DIMM slots on the motherboard
C) HDMI ports
D) Power sockets

**Correct Answer: B**

**Q454. When you open an application on your computer, it loads into:**

A) The hard drive only
B) RAM for fast access
C) The printer
D) The monitor

**Correct Answer: B**

**Q455. If a computer runs out of RAM during operation, the OS may use:**

A) Extra monitors
B) Virtual memory (swap space on the hard drive)
C) Additional power supply
D) Physical paper for storage

**Correct Answer: B**

### *Secondary Memory*

**Q456. Secondary memory provides:**

A) Temporary storage that is cleared when power is off
B) Permanent or long-term storage for data and programs
C) Only processing capability
D) Only display output

**Correct Answer: B**

**Q457. Secondary memory is:**

A) Volatile
B) Non-volatile
C) A type of RAM
D) An input device

**Correct Answer: B**

**Q458. Which of the following is a type of secondary memory?**

A) RAM
B) Cache memory
C) Hard disk drive
D) CPU register

**Correct Answer: C**

**Q459. Secondary memory is slower than primary memory because:**

A) It uses faster technology
B) It uses mechanical or slower electronic storage media
C) It has no storage capability
D) It connects via faster buses

**Correct Answer: B**

**Q460. SSD stands for:**

A) Solid State Drive
B) Standard Storage Device
C) Secondary System Disk
D) Static Storage Drive

**Correct Answer: A**

**Q461. An SSD is faster than an HDD because:**

A) It has more moving parts
B) It has no mechanical moving parts and uses flash memory
C) It uses magnetic platters
D) It requires more power

**Correct Answer: B**

**Q462. CD, DVD, and Blu-ray are types of:**

A) Primary memory
B) Secondary optical storage
C) Input devices
D) Output devices only

**Correct Answer: B**

**Q463. USB flash drives are:**

A) Primary memory devices
B) Portable secondary storage devices
C) Processing units
D) Display devices

**Correct Answer: B**

**Q464. Secondary memory retains data even when:**

A) The computer is running only
B) The computer is powered off
C) The keyboard is connected
D) The monitor is on

**Correct Answer: B**

**Q465. A typical modern HDD capacity ranges from:**

A) 1 KB to 100 KB
B) 500 GB to several TB
C) 1 byte to 10 bytes
D) 100 bits

**Correct Answer: B**

**Q466. External hard drives connect to computers via:**

A) DIMM slots
B) USB or Thunderbolt ports
C) RAM slots
D) CPU sockets

**Correct Answer: B**

**Q467. SD cards used in cameras and phones are:**

A) Primary memory
B) Secondary flash storage
C) Processing chips
D) Sound cards

**Correct Answer: B**

### *Magnetic Tape*

**Q468. Magnetic tape stores data using:**

A) Optical laser technology
B) A magnetizable coating on a thin plastic strip
C) Electrical capacitors
D) Light patterns

**Correct Answer: B**

**Q469. Magnetic tape uses which type of access?**

A) Random access
B) Sequential access
C) Immediate access
D) Parallel access

**Correct Answer: B**

**Q470. Magnetic tape is commonly used for:**

A) Running software applications
B) Data backup and archival storage
C) Real-time gaming
D) Display output

**Correct Answer: B**

**Q471. A disadvantage of magnetic tape is:**

A) Very high cost
B) Slow access time due to sequential reading
C) It cannot store data at all
D) It is too fast

**Correct Answer: B**

**Q472. An advantage of magnetic tape is:**

A) Fast random access
B) Very low cost per gigabyte for large-scale storage
C) Instant data retrieval
D) No physical medium needed

**Correct Answer: B**

**Q473. LTO (Linear Tape-Open) is a type of:**

A) Optical disc
B) Magnetic tape format used for backup
C) RAM module
D) CPU chip

**Correct Answer: B**

**Q474. Magnetic tape is most suitable for:**

A) Frequently accessed data
B) Rarely accessed archival data that needs long-term preservation
C) Running operating systems
D) Displaying graphics

**Correct Answer: B**

**Q475. Large organizations store magnetic tape backups in:**

A) The cloud only
B) Offsite secure storage facilities
C) On employee desks
D) In recycling bins

**Correct Answer: B**

**Q476. Modern LTO tapes can store:**

A) A few kilobytes only
B) Several terabytes of data on a single cartridge
C) Only 1 MB
D) No data at all

**Correct Answer: B**

**Q477. Magnetic tape was first used for computer data storage in the:**

A) 2010s
B) 1950s
C) 1990s
D) 2000s

**Correct Answer: B**

### *Hard Disk*

**Q478. A hard disk drive (HDD) stores data on:**

A) Magnetic tape reels
B) Rapidly spinning magnetic platters
C) Optical discs
D) Paper cards

**Correct Answer: B**

**Q479. The read/write head of an HDD:**

A) Touches the platter directly
B) Floats just above the spinning platter
C) Is located inside the RAM
D) Is the same as the CPU

**Correct Answer: B**

**Q480. HDD speed is often measured in:**

A) Watts
B) RPM (Revolutions Per Minute)
C) Lumens
D) Decibels

**Correct Answer: B**

**Q481. A common HDD speed is:**

A) 100 RPM
B) 5400 or 7200 RPM
C) 1 million RPM
D) 10 RPM

**Correct Answer: B**

**Q482. Hard disk drives are examples of:**

A) Primary memory
B) Secondary storage devices
C) Input devices
D) Output devices

**Correct Answer: B**

**Q483. Disk fragmentation in an HDD means:**

A) The disk is physically broken
B) Files are stored in non-contiguous sectors, slowing access
C) The disk has too much free space
D) The disk is perfectly organized

**Correct Answer: B**

**Q484. Defragmentation is the process of:**

A) Breaking files into smaller pieces
B) Reorganizing fragmented data on a disk for faster access
C) Deleting all files
D) Formatting the drive

**Correct Answer: B**

**Q485. SATA is a common interface for connecting HDDs to the:**

A) Printer
B) Motherboard
C) Mouse
D) Speaker

**Correct Answer: B**

**Q486. HDD platters are made of:**

A) Plastic only
B) Glass or aluminum coated with magnetic material
C) Paper
D) Wood

**Correct Answer: B**

**Q487. The capacity of a typical modern internal HDD is:**

A) 100 MB
B) 1 TB to 4 TB or more
C) 10 bytes
D) 5 KB

**Correct Answer: B**

**Q488. A head crash on an HDD occurs when:**

A) The user drops the mouse
B) The read/write head contacts the platter surface, causing damage
C) The monitor turns off
D) The keyboard stops working

**Correct Answer: B**

**Q489. HDDs are being increasingly replaced by SSDs because:**

A) HDDs are smaller in size
B) SSDs are faster, more durable, and have no moving parts
C) HDDs are more expensive
D) SSDs have more moving parts

**Correct Answer: B**

### *Floppy Disk*

**Q490. A floppy disk is a type of:**

A) Primary memory
B) Removable secondary storage medium
C) Processing unit
D) Output device

**Correct Answer: B**

**Q491. The standard 3.5-inch floppy disk had a capacity of:**

A) 1 TB
B) 1.44 MB
C) 500 GB
D) 100 GB

**Correct Answer: B**

**Q492. Floppy disks store data using:**

A) Optical laser technology
B) Magnetic coating on a flexible disk
C) Flash memory
D) Holographic storage

**Correct Answer: B**

**Q493. Floppy disks were widely used during the:**

A) 2020s
B) 1980s and 1990s
C) 2010s
D) 1940s

**Correct Answer: B**

**Q494. Floppy disks have largely been replaced by:**

A) Larger floppy disks
B) USB flash drives, CDs, and cloud storage
C) Paper notebooks
D) Typewriters

**Correct Answer: B**

**Q495. The 'Save' icon in many applications resembles a:**

A) Hard drive
B) Floppy disk
C) USB drive
D) CD

**Correct Answer: B**

**Q496. A floppy disk drive was abbreviated as:**

A) HDD
B) FDD
C) SSD
D) DVD

**Correct Answer: B**

**Q497. The earlier 5.25-inch floppy disk was:**

A) Smaller than the 3.5-inch disk
B) Larger and more flexible than the 3.5-inch disk
C) Made of metal
D) Used in modern computers

**Correct Answer: B**

**Q498. A floppy disk is portable because:**

A) It weighs several kilograms
B) It is small and lightweight, easily carried between computers
C) It requires a power outlet
D) It needs internet to function

**Correct Answer: B**

**Q499. Compared to modern USB drives, floppy disks have:**

A) Greater storage capacity
B) Much less storage capacity
C) Faster transfer speeds
D) Better durability

**Correct Answer: B**

### *RAM vs Secondary Memory*

**Q500. The main difference between RAM and secondary memory is:**

A) RAM is permanent, secondary is temporary
B) RAM is volatile and fast, secondary memory is non-volatile and slower
C) Both are exactly the same
D) Secondary memory is faster than RAM

**Correct Answer: B**

**Q501. Data in RAM is lost when power goes off, but data in a hard disk is:**

A) Also lost immediately
B) Retained even without power
C) Transferred to the printer
D) Erased automatically

**Correct Answer: B**

**Q502. CPU accesses RAM in nanoseconds, while accessing a hard disk takes:**

A) Nanoseconds too
B) Milliseconds (much slower)
C) Hours
D) Days

**Correct Answer: B**

**Q503. RAM is used for storing:**

A) Permanent files only
B) Currently running programs and active data
C) Archived data for years
D) Backup copies only

**Correct Answer: B**

**Q504. Secondary memory is used for storing:**

A) Only running programs
B) Files, applications, and the operating system permanently
C) Only display settings
D) Only temporary cache

**Correct Answer: B**

**Q505. Which is more expensive per gigabyte?**

A) Hard disk drive
B) RAM
C) Floppy disk
D) Magnetic tape

**Correct Answer: B**

**Q506. A computer needs both RAM and secondary storage because:**

A) RAM alone is too expensive for permanent storage
B) RAM provides speed for active tasks while secondary memory stores data permanently
C) Secondary memory is too fast
D) They serve identical purposes

**Correct Answer: B**

**Q507. When a computer boots up, the OS loads from secondary storage into:**

A) The monitor
B) RAM
C) The printer
D) The network cable

**Correct Answer: B**

**Q508. Typical RAM capacity is measured in GB, while hard disk capacity is measured in:**

A) Bytes only
B) GB to TB
C) Bits only
D) KB only

**Correct Answer: B**

**Q509. Virtual memory is a technique that uses secondary storage to:**

A) Replace RAM entirely
B) Extend the effective size of RAM when physical RAM is full
C) Speed up the hard drive
D) Delete unused files

**Correct Answer: B**

**Q510. Cache memory is even faster than RAM and sits between:**

A) The power supply and the monitor
B) The CPU and RAM to speed up data access
C) The hard drive and the USB port
D) The keyboard and mouse

**Correct Answer: B**

**Q511. Which statement is TRUE?**

A) RAM has greater capacity than hard drives
B) Hard drives have greater capacity but are slower than RAM
C) RAM and hard drives are equally fast
D) Hard drives are always faster than RAM

**Correct Answer: B**

**Q512. ROM (Read-Only Memory) is different from RAM because ROM is:**

A) Volatile
B) Non-volatile and retains data without power
C) Faster than RAM
D) Used only for display

**Correct Answer: B**

**Q513. BIOS is stored in ROM because it needs to be available:**

A) Only when the user requests
B) Immediately when the computer starts, before the OS loads
C) Only during shutdown
D) Only during printing

**Correct Answer: B**

## Input/Output Devices

### *Laser Printer*

**Q514. A laser printer uses which technology to produce prints?**

A) Ink spraying
B) Laser beam and toner
C) Impact ribbons
D) Thermal wax

**Correct Answer: B**

**Q515. Laser printers are known for producing:**

A) Low-quality blurry prints
B) High-quality, sharp text and graphics
C) Only colored prints
D) Only handwritten text

**Correct Answer: B**

**Q516. The main consumable in a laser printer is:**

A) Ink cartridge
B) Toner cartridge
C) Ribbon
D) Paper only

**Correct Answer: B**

**Q517. Laser printers are typically faster than:**

A) Other laser printers
B) Inkjet printers
C) Nothing, they are the slowest
D) Network switches

**Correct Answer: B**

**Q518. A laser printer uses a drum to:**

A) Store music
B) Transfer toner to paper using electrostatic charge
C) Spin the paper in circles
D) Generate electricity

**Correct Answer: B**

**Q519. Laser printers are ideal for:**

A) Only printing photos
B) High-volume office printing with fast speeds
C) Only printing envelopes
D) Only printing on fabric

**Correct Answer: B**

**Q520. The resolution of laser printers is measured in:**

A) PPM
B) DPI (Dots Per Inch)
C) RPM
D) GHz

**Correct Answer: B**

**Q521. A typical office laser printer resolution is:**

A) 72 DPI
B) 600 to 1200 DPI
C) 10 DPI
D) 1 DPI

**Correct Answer: B**

**Q522. Laser printers produce less noise compared to:**

A) All devices
B) Impact printers like dot matrix
C) Other laser printers
D) No printers

**Correct Answer: B**

**Q523. Color laser printers use how many toner cartridges?**

A) One
B) Four (Cyan, Magenta, Yellow, Black)
C) Two
D) Ten

**Correct Answer: B**

**Q524. The process inside a laser printer includes:**

A) Only heating paper
B) Charging, exposing, developing, transferring, and fusing
C) Only cutting paper
D) Only folding paper

**Correct Answer: B**

**Q525. A fuser unit in a laser printer:**

A) Cools down the paper
B) Heats and presses toner onto the paper to make it permanent
C) Cuts the paper
D) Adds water to the paper

**Correct Answer: B**

**Q526. Cost per page for laser printers is typically:**

A) Higher than inkjet printers
B) Lower than inkjet printers for text printing
C) The same as handwriting
D) Infinite

**Correct Answer: B**

### *Printer Speed (PPM)*

**Q527. PPM stands for:**

A) Pages Per Minute
B) Pixels Per Monitor
C) Prints Per Month
D) Points Per Margin

**Correct Answer: A**

**Q528. A printer rated at 30 PPM can print approximately:**

A) 30 pages per hour
B) 30 pages per minute
C) 30 pages per day
D) 30 pages per year

**Correct Answer: B**

**Q529. Higher PPM rating indicates:**

A) Slower printing
B) Faster printing speed
C) Better color quality
D) Larger paper size

**Correct Answer: B**

**Q530. Office laser printers typically have PPM ratings of:**

A) 1-2 PPM
B) 20-50 PPM
C) 500+ PPM
D) 0.5 PPM

**Correct Answer: B**

**Q531. PPM ratings may vary between monochrome and color printing because:**

A) Color printing is always faster
B) Color printing requires processing more data (CMYK) and is usually slower
C) Both are always the same speed
D) Monochrome printing requires more ink

**Correct Answer: B**

**Q532. A home inkjet printer typically has a PPM of:**

A) 100+ PPM
B) 5-15 PPM
C) 500 PPM
D) 0.1 PPM

**Correct Answer: B**

**Q533. Industrial production printers can have PPM ratings of:**

A) Less than 1 PPM
B) Over 100 PPM or even thousands per hour
C) Exactly 2 PPM always
D) 0 PPM

**Correct Answer: B**

**Q534. PPM is an important specification when choosing a printer for:**

A) Home decoration purposes
B) High-volume office environments where speed matters
C) Painting artwork
D) Cooking recipes

**Correct Answer: B**

**Q535. First Page Out Time is related to PPM and measures:**

A) How long before the printer is discarded
B) Time taken to produce the first printed page after sending a job
C) How long paper lasts in storage
D) The time to install a printer

**Correct Answer: B**

**Q536. Duplex printing at a given PPM:**

A) Doubles the speed
B) May reduce effective PPM since both sides are printed
C) Has no effect on speed
D) Triples the speed

**Correct Answer: B**

**Q537. Network printers serving many users need higher PPM to:**

A) Save electricity
B) Handle multiple print jobs efficiently
C) Look more expensive
D) Reduce paper jams

**Correct Answer: B**

**Q538. PPM is measured for printing at:**

A) Maximum resolution with full color
B) Standard or draft quality for consistent benchmarking
C) The smallest possible paper
D) With no paper loaded

**Correct Answer: B**

**Q539. A label printer typically has lower PPM because:**

A) It prints on larger paper
B) Labels are smaller and require precise alignment per print
C) It uses no ink
D) It prints faster than office printers

**Correct Answer: B**

### *DPI vs PPM*

**Q540. DPI measures print:**

A) Speed
B) Quality (resolution)
C) Cost
D) Weight

**Correct Answer: B**

**Q541. PPM measures print:**

A) Quality
B) Speed
C) Color depth
D) Paper size

**Correct Answer: B**

**Q542. A printer with 1200 DPI and 30 PPM has:**

A) High resolution and high speed
B) Low resolution and low speed
C) No printing capability
D) Only scanning capability

**Correct Answer: A**

**Q543. For photo printing, which specification matters more?**

A) PPM
B) DPI
C) Both are irrelevant
D) Paper weight only

**Correct Answer: B**

**Q544. For bulk office document printing, which specification matters more?**

A) DPI mainly
B) PPM mainly
C) Neither
D) The printer's color

**Correct Answer: B**

**Q545. Higher DPI means:**

A) Faster output
B) More dots per inch, resulting in sharper and more detailed prints
C) Fewer pages printed
D) Louder printing

**Correct Answer: B**

**Q546. A printer advertising 600 DPI and 40 PPM is suited for:**

A) Very slow photo printing only
B) Fast office printing with good text quality
C) No practical use
D) Only envelope printing

**Correct Answer: B**

**Q547. Increasing DPI generally:**

A) Speeds up printing
B) May slow down printing as more detail needs to be rendered
C) Has no effect on anything
D) Reduces print quality

**Correct Answer: B**

**Q548. A 300 DPI print is suitable for:**

A) Billboard advertising only
B) Standard text documents and basic graphics
C) Microscopic analysis
D) No practical use

**Correct Answer: B**

**Q549. Printers with very high DPI (2400+) are typically used for:**

A) Draft printing
B) Professional photo and graphic design printing
C) Printing blank pages
D) Text-only printing

**Correct Answer: B**

**Q550. ISO standards for measuring PPM ensure:**

A) All printers claim the same speed
B) Consistent and comparable speed ratings across different printer brands
C) No standards exist
D) Only one brand can measure PPM

**Correct Answer: B**

**Q551. An inkjet printer with 4800 DPI but only 8 PPM is best for:**

A) High-volume office printing
B) High-quality photo printing at home
C) Industrial printing
D) No printing at all

**Correct Answer: B**

**Q552. DPI is relevant for both printers and:**

A) Keyboards
B) Scanners
C) Power supplies
D) Speakers

**Correct Answer: B**

**Q553. Scanner DPI determines the:**

A) Speed of scanning
B) Detail and quality of the scanned image
C) Color of the scanner
D) Size of the scanner

**Correct Answer: B**

## Keyboard & Hardware

### *ESC Key*

**Q554. The ESC key on a keyboard stands for:**

A) Essential System Control
B) Escape
C) External System Command
D) Electronic Signal Controller

**Correct Answer: B**

**Q555. The ESC key is typically used to:**

A) Type letters
B) Cancel or close a current operation or dialog box
C) Turn off the computer
D) Increase volume

**Correct Answer: B**

**Q556. Pressing ESC while viewing a full-screen video usually:**

A) Deletes the video
B) Exits full-screen mode
C) Increases brightness
D) Mutes audio

**Correct Answer: B**

**Q557. The ESC key is located at the:**

A) Bottom right of the keyboard
B) Top left corner of the keyboard
C) Center of the keyboard
D) On the mouse

**Correct Answer: B**

**Q558. In many dialog boxes, pressing ESC is equivalent to clicking:**

A) OK
B) Cancel
C) Save
D) Print

**Correct Answer: B**

**Q559. In web browsers, pressing ESC can:**

A) Delete all bookmarks
B) Stop a page from loading
C) Open a new tab
D) Print the page

**Correct Answer: B**

**Q560. The ESC key is part of which section of the keyboard?**

A) Numeric keypad
B) Function keys area
C) Alphabetic section
D) Arrow keys section

**Correct Answer: B**

**Q561. In gaming, the ESC key is often used to:**

A) Jump
B) Open the pause or menu screen
C) Attack
D) Move forward

**Correct Answer: B**

**Q562. When filling a form online, pressing ESC may:**

A) Submit the form
B) Close a dropdown or dismiss a popup
C) Delete all typed text permanently
D) Log you out of the system

**Correct Answer: B**

**Q563. In Microsoft Excel, pressing ESC while editing a cell:**

A) Saves the cell content
B) Cancels the edit and restores the original value
C) Deletes the entire spreadsheet
D) Prints the worksheet

**Correct Answer: B**

***Enter Key***

**Q564. The Enter key is also known as the:**

A) Escape key
B) Return key
C) Delete key
D) Backspace key

**Correct Answer: B**

**Q565. The Enter key is primarily used to:**

A) Delete text
B) Confirm a command or move to a new line
C) Turn off the monitor
D) Adjust brightness

**Correct Answer: B**

**Q566. In a word processor, pressing Enter creates a:**

A) Bold text
B) New paragraph or line break
C) Table
D) Header

**Correct Answer: B**

**Q567. In a web browser address bar, pressing Enter:**

A) Deletes the URL
B) Navigates to the typed URL
C) Closes the browser
D) Opens settings

**Correct Answer: B**

**Q568. When typing in a search engine, pressing Enter:**

A) Clears the search box
B) Executes the search query
C) Closes the search engine
D) Opens a new tab

**Correct Answer: B**

**Q569. In a command-line interface, pressing Enter:**

A) Cancels the command
B) Executes the typed command
C) Opens a GUI window
D) Shuts down the computer

**Correct Answer: B**

**Q570. Most keyboards have Enter keys on:**

A) Only the left side
B) The main keyboard area and the numeric keypad
C) Only the top row
D) Only the function key row

**Correct Answer: B**

**Q571. In dialog boxes, pressing Enter often activates the:**

A) Cancel button
B) Default or highlighted button (usually OK)
C) Close window button
D) Print button

**Correct Answer: B**

**Q572. In spreadsheets, pressing Enter after typing in a cell:**

A) Deletes the cell
B) Confirms the entry and moves to the next cell
C) Formats the cell as bold
D) Merges cells together

**Correct Answer: B**

**Q573. The Enter key was originally called Return on:**

A) IBM keyboards
B) Apple Macintosh keyboards
C) No keyboards
D) Only gaming keyboards

**Correct Answer: B**

### *Delete Key*

**Q574. The Delete key removes characters:**

A) To the left of the cursor
B) To the right of the cursor (or the selected item)
C) Above the cursor
D) Below the cursor

**Correct Answer: B**

**Q575. The Delete key differs from Backspace in that:**

A) Both do the same thing
B) Delete removes characters to the right; Backspace removes to the left
C) Delete types characters; Backspace removes them
D) Delete increases font size

**Correct Answer: B**

**Q576. In file management, pressing Delete on a selected file:**

A) Opens the file
B) Moves the file to the Recycle Bin or Trash
C) Renames the file
D) Copies the file

**Correct Answer: B**

**Q577. Shift + Delete on Windows permanently deletes a file:**

A) Into the Recycle Bin
B) Without sending it to the Recycle Bin
C) To a backup folder
D) To the desktop

**Correct Answer: B**

**Q578. In word processors, the Delete key removes:**

A) The entire document
B) The character or selected text at or after the cursor position
C) Only images
D) Only headers

**Correct Answer: B**

**Q579. Ctrl + Alt + Delete on Windows opens:**

A) A game
B) Task Manager or a security options screen
C) The calculator
D) Microsoft Paint

**Correct Answer: B**

**Q580. On many laptop keyboards, the Delete key may require using the:**

A) Mouse only
B) Fn key combination
C) Touchscreen
D) External keyboard

**Correct Answer: B**

**Q581. In email applications, the Delete key:**

A) Sends the email
B) Moves the selected email to the Trash folder
C) Forwards the email
D) Composes a new email

**Correct Answer: B**

**Q582. The Delete key is located near which area of a standard keyboard?**

A) The spacebar
B) Above the arrow keys (navigation cluster)
C) The numeric keypad only
D) The function keys only

**Correct Answer: B**

**Q583. In spreadsheet software, pressing Delete on a selected cell:**

A) Deletes the entire column
B) Clears the cell contents
C) Saves the spreadsheet
D) Prints the cell

**Correct Answer: B**

### *Insert Key*

**Q584. The Insert key toggles between:**

A) Bold and italic
B) Insert mode and overtype mode
C) Upper and lower case
D) English and French

**Correct Answer: B**

**Q585. In insert mode, typing adds new characters:**

A) By replacing existing characters
B) Without replacing existing text
C) By deleting the entire line
D) At the end of the document only

**Correct Answer: B**

**Q586. In overtype mode, typing:**

A) Adds characters before existing text
B) Replaces existing characters with the newly typed ones
C) Deletes the entire paragraph
D) Only changes font size

**Correct Answer: B**

**Q587. The Insert key is abbreviated as:**

A) DEL
B) INS
C) ESC
D) TAB

**Correct Answer: B**

**Q588. Shift + Insert is a keyboard shortcut for:**

A) Copy
B) Paste
C) Cut
D) Undo

**Correct Answer: B**

**Q589. Ctrl + Insert is a keyboard shortcut for:**

A) Paste
B) Copy
C) Cut
D) Delete

**Correct Answer: B**

**Q590. The Insert key is located in the:**

A) Bottom left of the keyboard
B) Navigation key cluster between the main keys and numeric keypad
C) Top left corner
D) On the mouse

**Correct Answer: B**

**Q591. In many modern applications, the Insert key is:**

A) The most used key
B) Rarely used and sometimes disabled by default
C) Used for power management
D) Used to adjust screen brightness

**Correct Answer: B**

**Q592. In older DOS-based text editors, the Insert key was essential for:**

A) Playing games
B) Switching between text entry modes
C) Changing screen resolution
D) Connecting to the internet

**Correct Answer: B**

**Q593. Some modern keyboards omit the Insert key to:**

A) Add more letter keys
B) Save space in compact keyboard designs
C) Reduce cost by removing all keys
D) Make the keyboard heavier

**Correct Answer: B**

## Computer Hardware Basics

### *Semiconductor Definition*

**Q594. A semiconductor is a material with electrical conductivity between:**

A) Two metals
B) A conductor and an insulator
C) Two insulators
D) A liquid and a gas

**Correct Answer: B**

**Q595. The most commonly used semiconductor material is:**

A) Copper
B) Silicon
C) Gold
D) Iron

**Correct Answer: B**

**Q596. Semiconductors are the basis of:**

A) Light bulbs only
B) Modern electronic components like transistors and chips
C) Wooden furniture
D) Paper production

**Correct Answer: B**

**Q597. Doping a semiconductor means:**

A) Painting it
B) Adding impurities to change its electrical properties
C) Heating it to high temperatures only
D) Cooling it to below zero

**Correct Answer: B**

**Q598. N-type semiconductor is created by adding impurities that provide extra:**

A) Protons
B) Electrons
C) Neutrons
D) Photons

**Correct Answer: B**

**Q599. P-type semiconductor is created by adding impurities that create:**

A) Extra electrons
B) Holes (absence of electrons)
C) Extra protons
D) Extra neutrons

**Correct Answer: B**

**Q600. A transistor is made from:**

A) Only conductors
B) Semiconductor materials
C) Only insulators
D) Only plastics

**Correct Answer: B**

**Q601. Semiconductors operate best at:**

A) Absolute zero temperature only
B) Room temperature and controlled conditions
C) Boiling temperature only
D) Extreme cold only

**Correct Answer: B**

**Q602. Silicon Valley gets its name from:**

A) A valley made of silicon rocks
B) The prevalence of semiconductor (silicon-based) technology companies
C) A type of food
D) A historical mining operation

**Correct Answer: B**

**Q603. Germanium was used as a semiconductor before:**

A) It was replaced by gold
B) Silicon became the dominant material
C) It was banned worldwide
D) Copper replaced it

**Correct Answer: B**

**Q604. LEDs (Light Emitting Diodes) are made from:**

A) Pure metals
B) Semiconductor materials
C) Glass only
D) Plastic only

**Correct Answer: B**

**Q605. Integrated circuits (ICs) contain thousands to billions of:**

A) Wires
B) Transistors made from semiconductors
C) Light bulbs
D) Batteries

**Correct Answer: B**

**Q606. The semiconductor industry is critical for manufacturing:**

A) Only automobiles
B) CPUs, memory chips, sensors, and most electronic devices
C) Only furniture
D) Only clothing

**Correct Answer: B**

**Q607. A diode is a semiconductor device that allows current to flow in:**

A) Any direction equally
B) Primarily one direction
C) No direction at all
D) Only when heated

**Correct Answer: B**

**Q608. Photovoltaic cells (solar cells) use semiconductors to convert:**

A) Sound to electricity
B) Light to electricity
C) Heat to sound
D) Wind to light

**Correct Answer: B**

### *Chip Manufacturing Concept*

**Q609. Computer chips are manufactured on thin wafers of:**

A) Copper
B) Silicon
C) Gold
D) Aluminum

**Correct Answer: B**

**Q610. The process of creating patterns on a silicon wafer is called:**

A) Printing
B) Photolithography
C) Painting
D) Welding

**Correct Answer: B**

**Q611. A fabrication plant for chip manufacturing is commonly called a:**

A) Workshop
B) Fab
C) Studio
D) Kitchen

**Correct Answer: B**

**Q612. Chip manufacturing occurs in:**

A) Open fields
B) Cleanrooms with controlled particle-free environments
C) Regular offices
D) Outdoor factories

**Correct Answer: B**

**Q613. The size of transistors on modern chips is measured in:**

A) Meters
B) Nanometers
C) Kilometers
D) Centimeters

**Correct Answer: B**

**Q614. Smaller transistor sizes allow chips to be:**

A) Slower and larger
B) Faster, more power-efficient, and contain more transistors
C) Less useful
D) Heavier

**Correct Answer: B**

**Q615. TSMC (Taiwan Semiconductor Manufacturing Company) is the world's largest:**

A) Car manufacturer
B) Contract chip manufacturer
C) Furniture company
D) Food processor

**Correct Answer: B**

**Q616. Intel and AMD are major designers of:**

A) Clothing
B) Computer processors (CPUs and GPUs)
C) Musical instruments
D) Kitchen appliances

**Correct Answer: B**

**Q617. Moore's Law predicts that the number of transistors on a chip:**

A) Stays the same forever
B) Roughly doubles every two years
C) Halves every year
D) Triples every month

**Correct Answer: B**

**Q618. EUV (Extreme Ultraviolet) lithography is used for manufacturing chips at:**

A) Large scale factories for cars
B) Very small nanometer nodes (7nm, 5nm, 3nm)
C) Large building construction
D) Food packaging

**Correct Answer: B**

**Q619. A single silicon wafer can produce:**

A) One chip only
B) Hundreds to thousands of chips
C) No chips at all
D) Only ten chips

**Correct Answer: B**

**Q620. After fabrication, chips undergo testing to:**

A) Make them look pretty
B) Identify defective units and ensure quality
C) Add more transistors
D) Change their color

**Correct Answer: B**

**Q621. Packaging of a chip involves:**

A) Wrapping it in paper
B) Enclosing the silicon die in a protective casing with electrical connections
C) Destroying it
D) Painting it

**Correct Answer: B**

**Q622. The chip supply chain involves:**

A) Only one company
B) Design houses, foundries, packaging firms, and testing facilities
C) Only retail stores
D) No companies at all

**Correct Answer: B**

**Q623. ARM, Qualcomm, and Apple design chips but often have them manufactured by:**

A) Their own factories only
B) Foundries like TSMC and Samsung
C) Home users
D) Retail stores

**Correct Answer: B**

## Types of Computers

### *Analog Computer*

**Q624. An analog computer processes:**

A) Only binary digital data
B) Continuous data such as temperature, pressure, or voltage
C) Only text files
D) Only images

**Correct Answer: B**

**Q625. An example of an analog computing device is a:**

A) Laptop
B) Speedometer in a car
C) Smartphone
D) Desktop PC

**Correct Answer: B**

**Q626. Analog computers represent data using:**

A) Discrete binary digits (0 and 1)
B) Continuously varying physical quantities
C) Only text characters
D) Only colored pixels

**Correct Answer: B**

**Q627. A thermometer that shows temperature on a sliding scale is an example of:**

A) Digital device
B) Analog device
C) Hybrid device
D) No computing device

**Correct Answer: B**

**Q628. Analog computers were widely used for:**

A) Social media browsing
B) Scientific and engineering simulations before digital computers
C) Only gaming
D) Only word processing

**Correct Answer: B**

**Q629. A slide rule is an example of a simple:**

A) Digital computer
B) Analog computing device
C) Hybrid computer
D) Printer

**Correct Answer: B**

**Q630. Analog computers are less accurate than digital computers because:**

A) They use more bits
B) Physical measurements are subject to noise and limited precision
C) They are faster
D) They use binary code

**Correct Answer: B**

**Q631. An analog clock with moving hands is an example of:**

A) Digital display
B) Analog representation of time
C) Binary computing
D) Hybrid computing

**Correct Answer: B**

**Q632. Analog computers work best with:**

A) Discrete integer values only
B) Real-world physical phenomena that change continuously
C) Boolean logic only
D) Text processing only

**Correct Answer: B**

**Q633. The output of an analog computer is typically:**

A) A printed report
B) A continuous graph, dial reading, or physical measurement
C) A digital display only
D) A binary code sequence

**Correct Answer: B**

**Q634. Operational amplifiers are key components in analog computers used for:**

A) Displaying text
B) Performing mathematical operations on continuous signals
C) Storing digital files
D) Printing documents

**Correct Answer: B**

**Q635. Analog computers have been largely replaced by digital computers because:**

A) Analog is more accurate
B) Digital computers offer higher precision, flexibility, and programmability
C) Digital computers are always cheaper
D) Analog computers are too small

**Correct Answer: B**

**Q636. A fuel gauge in a car is an example of:**

A) Digital computing
B) Analog measurement
C) Hybrid computing
D) Binary system

**Correct Answer: B**

### *Digital Computer*

**Q637. A digital computer processes data in the form of:**

A) Continuous signals
B) Discrete binary digits (0 and 1)
C) Analog waves
D) Physical measurements only

**Correct Answer: B**

**Q638. Which of the following is a digital computer?**

A) A mercury thermometer
B) A laptop computer
C) A vinyl record player
D) A sundial

**Correct Answer: B**

**Q639. Digital computers are more accurate than analog computers because:**

A) They are more physical
B) They use precise binary representation and are not affected by signal noise
C) They are slower
D) They cannot process data

**Correct Answer: B**

**Q640. The binary system used by digital computers has a base of:**

A) 8
B) 10
C) 2
D) 16

**Correct Answer: C**

**Q641. Digital computers can be programmed to:**

A) Only one specific task
B) Perform a vast variety of tasks through software
C) Nothing at all
D) Only calculate numbers

**Correct Answer: B**

**Q642. Examples of digital computers include:**

A) Only mainframes
B) Desktops, laptops, tablets, and smartphones
C) Only calculators
D) Only watches

**Correct Answer: B**

**Q643. Digital computers store data in:**

A) Analog signals
B) Binary form (bits and bytes)
C) Continuous waveforms
D) Physical samples

**Correct Answer: B**

**Q644. A bit in digital computing is:**

A) A small tool
B) The smallest unit of data, either 0 or 1
C) A type of cable
D) A color code

**Correct Answer: B**

**Q645. A byte consists of:**

A) 4 bits
B) 8 bits
C) 16 bits
D) 1 bit

**Correct Answer: B**

**Q646. Digital computers execute instructions through:**

A) Analog signal processing
B) A CPU that processes binary instructions
C) Paper tape reading only
D) Voice commands only

**Correct Answer: B**

**Q647. Digital computers are classified by size as:**

A) Only supercomputers
B) Microcomputers, minicomputers, mainframes, and supercomputers
C) Only laptops
D) Only smartphones

**Correct Answer: B**

**Q648. The versatility of digital computers comes from their ability to:**

A) Process only one data type
B) Run different software programs for different tasks
C) Only display video
D) Only play music

**Correct Answer: B**

**Q649. ENIAC was one of the first general-purpose:**

A) Analog computers
B) Electronic digital computers
C) Hybrid computers
D) Quantum computers

**Correct Answer: B**

### *Hybrid Computer*

**Q650. A hybrid computer combines features of:**

A) Only digital computers
B) Both analog and digital computers
C) Only analog computers
D) Only quantum computers

**Correct Answer: B**

**Q651. Hybrid computers are used when:**

A) Only digital processing is needed
B) Both continuous analog input and precise digital processing are required
C) No computing is needed
D) Only text processing is required

**Correct Answer: B**

**Q652. In a hybrid computer, the analog component typically:**

A) Stores files permanently
B) Accepts real-world continuous input like temperature or pressure
C) Only displays graphics
D) Only prints reports

**Correct Answer: B**

**Q653. In a hybrid computer, the digital component typically:**

A) Measures physical quantities
B) Processes the analog input with high precision and provides digital output
C) Only plays music
D) Only takes photographs

**Correct Answer: B**

**Q654. An ECG (Electrocardiogram) machine is an example of a:**

A) Pure digital computer
B) Pure analog computer
C) Hybrid computer
D) Quantum computer

**Correct Answer: C**

**Q655. A hybrid computer in a hospital might measure a patient's vital signs (analog) and:**

A) Ignore the data
B) Process them digitally for display and analysis
C) Only print them on paper
D) Only send them via fax

**Correct Answer: B**

**Q656. Petrol pump systems use hybrid computing to:**

A) Only display advertisements
B) Measure fuel flow (analog) and calculate cost digitally
C) Only play music
D) Only accept cash payments

**Correct Answer: B**

**Q657. Hybrid computers offer the advantage of:**

A) Neither speed nor accuracy
B) Speed of analog processing combined with accuracy of digital processing
C) Only analog disadvantages
D) Only digital disadvantages

**Correct Answer: B**

**Q658. Scientific research often uses hybrid computers for:**

A) Only browsing the internet
B) Processing experimental analog data with digital precision
C) Only sending emails
D) Only playing video games

**Correct Answer: B**

### *Hybrid Computer Use-cases*

**Q659. In weather forecasting, hybrid computers can:**

A) Only display forecasts
B) Process continuous atmospheric data and compute digital weather models
C) Only print weather maps
D) Only send weather alerts

**Correct Answer: B**

**Q660. Defense systems may use hybrid computers for:**

A) Only paperwork
B) Real-time radar signal processing (analog) with digital command and control
C) Only email communication
D) Only administrative tasks

**Correct Answer: B**

**Q661. In the oil industry, hybrid computers can:**

A) Only count barrels
B) Monitor continuous flow measurements and compute extraction rates digitally
C) Only print invoices
D) Only manage employee schedules

**Correct Answer: B**

**Q662. CT scan machines in hospitals use hybrid computing to:**

A) Only store patient names
B) Convert continuous X-ray signals into digital images for diagnosis
C) Only print appointment schedules
D) Only manage billing

**Correct Answer: B**

**Q663. Aircraft flight simulators may use hybrid computers to:**

A) Only display menus
B) Process continuous sensor inputs and compute digital flight dynamics in real time
C) Only record audio
D) Only manage ticketing

**Correct Answer: B**

**Q664. Industrial process control systems are hybrid because they:**

A) Only use digital inputs
B) Monitor analog sensors (temperature, pressure) and control processes digitally
C) Only print reports
D) Have no computing function

**Correct Answer: B**

**Q665. Automobile engine management systems are hybrid because they:**

A) Only play radio
B) Read analog sensor data and digitally adjust fuel injection and ignition
C) Only display speed
D) Only control windows

**Correct Answer: B**

**Q666. Robotic systems often use hybrid computing for:**

A) Only appearance
B) Processing sensor data (analog) and executing precise digital control algorithms
C) Only decorative purposes
D) Only communications

**Correct Answer: B**

**Q667. An ultrasound machine is a hybrid system because it:**

A) Only stores appointment data
B) Captures analog sound wave reflections and processes them into digital images
C) Only prints labels
D) Only plays music during procedures

**Correct Answer: B**

**Q668. Analog-to-Digital Converters (ADC) are essential components in hybrid computers because they:**

A) Delete analog signals
B) Convert continuous analog signals into discrete digital values for processing
C) Only amplify sounds
D) Only measure weight

**Correct Answer: B**

## Storage & Processing

### *Sequential Access Devices*

**Q669. Sequential access means data is read:**

A) In any random order instantly
B) In a fixed linear order from beginning to end
C) Backwards only
D) In circular patterns

**Correct Answer: B**

**Q670. Which of the following is a sequential access storage device?**

A) SSD
B) Hard disk drive
C) Magnetic tape
D) USB flash drive

**Correct Answer: C**

**Q671. Reading data from a sequential access device is slower because:**

A) All data is available instantly
B) You must pass through preceding data to reach the desired data
C) It has no storage medium
D) It uses no electricity

**Correct Answer: B**

**Q672. Sequential access is analogous to:**

A) Using a table of contents to jump to a chapter
B) Fast-forwarding a VHS tape to find a scene
C) Using a search engine
D) Clicking a bookmark

**Correct Answer: B**

**Q673. Sequential access is the opposite of:**

A) No access
B) Random access (direct access)
C) Physical access
D) Remote access

**Correct Answer: B**

**Q674. Which data structure uses sequential access by nature?**

A) Array with index
B) Linked list traversal
C) Hash table
D) Binary search tree

**Correct Answer: B**

**Q675. Audio cassette tapes use:**

A) Random access
B) Sequential access
C) No access method
D) Parallel access

**Correct Answer: B**

**Q676. VHS video tapes use:**

A) Random access like a DVD
B) Sequential access
C) Cloud access
D) Wireless access

**Correct Answer: B**

**Q677. Sequential access is efficient for:**

A) Randomly retrieving individual records
B) Processing all data in order (batch processing, backups)
C) Real-time database queries
D) Interactive gaming

**Correct Answer: B**

**Q678. A program that reads an entire file from start to finish uses:**

A) Random access pattern
B) Sequential access pattern
C) No access pattern
D) Cloud access only

**Correct Answer: B**

**Q679. Seeking a specific song on a cassette tape requires:**

A) Instant playback
B) Winding or fast-forwarding through the tape sequentially
C) No action
D) Pressing a search button

**Correct Answer: B**

**Q680. Modern SSDs do NOT use sequential access because:**

A) They have no storage
B) They use electronic flash memory allowing instant random access
C) They use tape technology
D) They have no speed

**Correct Answer: B**

**Q681. Batch processing systems traditionally used sequential access for:**

A) Real-time responses
B) Processing large volumes of sorted records efficiently
C) Interactive user interfaces
D) Video streaming

**Correct Answer: B**

**Q682. The access time for sequential devices depends on:**

A) Only the device's color
B) The position of the desired data relative to the current read position
C) Only the room temperature
D) Only the time of day

**Correct Answer: B**

**Q683. Paper tape, an early storage medium, used:**

A) Random access
B) Sequential access
C) Cloud access
D) Digital access only

**Correct Answer: B**

### *Magnetic Tape Usage*

**Q684. Magnetic tape is still used today primarily for:**

A) Running operating systems
B) Enterprise data backup and long-term archival
C) Real-time web serving
D) Gaming

**Correct Answer: B**

**Q685. Large corporations like banks use magnetic tape for:**

A) Customer gaming experiences
B) Disaster recovery and regulatory compliance archival
C) Social media posting
D) Video game development

**Correct Answer: B**

**Q686. Magnetic tape libraries in data centers store:**

A) Physical books
B) Thousands of tape cartridges managed by robotic systems
C) Coffee supplies
D) Paper documents

**Correct Answer: B**

**Q687. The cost per terabyte of magnetic tape is:**

A) Much higher than SSD
B) Significantly lower than SSD or HDD
C) The same as RAM
D) Infinite

**Correct Answer: B**

**Q688. Magnetic tape can reliably store data for:**

A) A few hours only
B) Decades with proper storage conditions
C) Only one day
D) Less than a minute

**Correct Answer: B**

**Q689. The tape silo in an enterprise environment is:**

A) A farm building
B) An automated tape library that stores and retrieves tape cartridges
C) A grain storage facility
D) A swimming pool

**Correct Answer: B**

**Q690. WORM (Write Once Read Many) tapes are used for:**

A) Storing earthworms
B) Regulatory compliance where data must not be altered
C) Erasing data repeatedly
D) Playing music

**Correct Answer: B**

**Q691. Offline storage using magnetic tape is called:**

A) Hot storage
B) Cold storage or nearline storage
C) Live storage
D) Active storage

**Correct Answer: B**

**Q692. NASA and CERN use magnetic tape for storing:**

A) Employee photos
B) Massive volumes of scientific and research data
C) Office memos only
D) Cafeteria menus

**Correct Answer: B**

**Q693. The latest LTO-9 tape technology supports native capacity of:**

A) 1 MB
B) 18 TB per cartridge
C) 100 bytes
D) 1 KB

**Correct Answer: B**

**Q694. Tape drives read and write data by:**

A) Using laser beams
B) Moving the tape past a magnetic read/write head
C) Shining light through the tape
D) Using sound vibrations

**Correct Answer: B**

**Q695. Magnetic tape is NOT suitable for:**

A) Long-term archival
B) Frequently accessed databases needing instant response
C) Backup storage
D) Disaster recovery copies

**Correct Answer: B**

**Q696. Cloud providers like AWS offer tape-based storage via:**

A) Amazon S3 only
B) AWS Storage Gateway with virtual tape library
C) Only physical tape delivery
D) No tape options at all

**Correct Answer: B**

**Q697. Air-gapped tape backups protect against:**

A) Physical theft only
B) Ransomware and cyber attacks since tapes are offline
C) Only fire damage
D) Nothing at all

**Correct Answer: B**

**Q698. Tape rotation schemes like GFS (Grandfather-Father-Son) ensure:**

A) Tapes are never reused
B) Organized backup cycles with daily, weekly, and monthly tapes
C) Only one backup copy exists
D) Tapes are destroyed daily

**Correct Answer: B**

## Programming Translators

### *Assembler*

**Q699. An assembler translates:**

A) High-level language to machine code
B) Assembly language to machine code
C) Machine code to assembly language
D) English to French

**Correct Answer: B**

**Q700. Assembly language is a:**

A) High-level language
B) Low-level programming language
C) Markup language
D) Natural language

**Correct Answer: B**

**Q701. Assembly language uses:**

A) Natural English sentences
B) Mnemonics that represent machine instructions
C) Only numbers in decimal
D) HTML tags

**Correct Answer: B**

**Q702. An example of an assembly mnemonic is:**

A) print('hello')
B) MOV, ADD, SUB, JMP
C) <html>
D) SELECT * FROM

**Correct Answer: B**

**Q703. Assembly language is specific to:**

A) All processor types equally
B) A particular processor architecture (e.g., x86, ARM)
C) Only web browsers
D) Only databases

**Correct Answer: B**

**Q704. The output of an assembler is:**

A) Source code
B) Machine code (object code)
C) HTML page
D) A PDF document

**Correct Answer: B**

**Q705. Assembler performs translation:**

A) Simultaneously while running the program
B) Before execution, converting the entire assembly file to machine code
C) After the program has finished running
D) Only during printing

**Correct Answer: B**

**Q706. Assembly language is considered low-level because it:**

A) Is easy to learn like Python
B) Closely corresponds to machine instructions of the processor
C) Has no relation to hardware
D) Runs in web browsers

**Correct Answer: B**

**Q707. One assembly language instruction typically translates to:**

A) Many machine language instructions
B) One machine language instruction
C) No machine instructions
D) One complete program

**Correct Answer: B**

**Q708. NASM and MASM are examples of:**

A) Compilers
B) Assemblers for x86 architecture
C) Web servers
D) Databases

**Correct Answer: B**

**Q709. Programs written in assembly language tend to be:**

A) Larger than high-level programs for the same task
B) Very efficient and fast but harder to write and maintain
C) Slower than Python programs
D) Identical to HTML programs

**Correct Answer: B**

**Q710. Assemblers also handle symbolic labels for memory addresses, making code:**

A) Impossible to write
B) More readable than raw machine code
C) Less readable
D) Only usable online

**Correct Answer: B**

**Q711. A two-pass assembler processes the source code:**

A) Once only
B) Twice: first to resolve labels, then to generate machine code
C) Three times
D) Zero times

**Correct Answer: B**

### *Compiler*

**Q712. A compiler translates:**

A) Assembly language to machine code
B) An entire high-level language program to machine code at once
C) Machine code to high-level language
D) Only comments in the code

**Correct Answer: B**

**Q713. Which of the following languages is typically compiled?**

A) Python
B) C
C) JavaScript
D) HTML

**Correct Answer: B**

**Q714. The compiled output is called:**

A) Source code
B) Object code or executable
C) Comments
D) Documentation

**Correct Answer: B**

**Q715. A compiler checks for errors:**

A) One line at a time during execution
B) In the entire source code before producing the executable
C) Only during printing
D) Never

**Correct Answer: B**

**Q716. Once a program is compiled successfully, the executable can run:**

A) Only with the compiler present
B) Without needing the compiler again
C) Only on the internet
D) Only once

**Correct Answer: B**

**Q717. GCC is a well-known compiler for:**

A) Java
B) C and C++
C) Python
D) HTML

**Correct Answer: B**

**Q718. Compilation produces machine code that is:**

A) Slower than interpreted code
B) Generally faster to execute than interpreted code
C) Identical to source code
D) Only readable by humans

**Correct Answer: B**

**Q719. A syntax error in a compiled language is detected:**

A) Only at runtime
B) At compile time before the program runs
C) Never
D) After the program finishes

**Correct Answer: B**

**Q720. The compilation process includes stages like:**

A) Only lexical analysis
B) Lexical analysis, parsing, optimization, and code generation
C) Only printing
D) Only formatting

**Correct Answer: B**

**Q721. Cross-compilation means compiling code on one platform for:**

A) The same platform only
B) A different target platform
C) No platform
D) Only paper output

**Correct Answer: B**

**Q722. Java uses a compiler (javac) to produce:**

A) Native machine code directly
B) Bytecode that runs on the Java Virtual Machine (JVM)
C) HTML pages
D) Only text files

**Correct Answer: B**

**Q723. The optimization phase of a compiler aims to:**

A) Make the code larger
B) Improve the efficiency and performance of the generated code
C) Add more bugs
D) Remove features

**Correct Answer: B**

**Q724. A linker is used after compilation to:**

A) Delete the object code
B) Combine object files and libraries into a final executable
C) Only add comments
D) Only format the code

**Correct Answer: B**

**Q725. Compiled programs are not easily portable because:**

A) They run everywhere identically
B) The machine code is specific to the target processor and OS
C) They are in plain text
D) They have no binary output

**Correct Answer: B**

### *Interpreter*

**Q726. An interpreter translates and executes code:**

A) All at once before running
B) Line by line (or statement by statement) at runtime
C) Only after the entire program finishes
D) Only during printing

**Correct Answer: B**

**Q727. Which of the following languages is typically interpreted?**

A) C
B) C++
C) Python
D) Assembly

**Correct Answer: C**

**Q728. An interpreter detects errors:**

A) All at once before running
B) When it encounters the problematic line during execution
C) Never
D) Only after the program has fully run

**Correct Answer: B**

**Q729. Interpreted programs are generally:**

A) Faster than compiled programs
B) Slower than compiled programs because translation happens at runtime
C) Identical in speed to compiled programs
D) Not executable at all

**Correct Answer: B**

**Q730. An advantage of interpreted languages is:**

A) Fastest possible execution speed
B) Easier debugging since errors are reported line by line
C) No need for a programming language
D) No errors ever occur

**Correct Answer: B**

**Q731. JavaScript in web browsers is executed by:**

A) A compiler only
B) A JavaScript engine that interprets/JIT-compiles code
C) The operating system kernel
D) The hardware directly

**Correct Answer: B**

**Q732. To run an interpreted program, you need:**

A) Only the source code
B) The interpreter installed on the machine along with the source code
C) A compiled executable
D) No software at all

**Correct Answer: B**

**Q733. REPL stands for:**

A) Read-Evaluate-Print Loop
B) Run-Execute-Print Logic
C) Real-time Evaluation Processing Line
D) Remote Execution Protocol Link

**Correct Answer: A**

**Q734. A REPL allows programmers to:**

A) Only view code
B) Interactively type code and see results immediately
C) Only compile programs
D) Only print documentation

**Correct Answer: B**

**Q735. Ruby and PHP are examples of:**

A) Compiled-only languages
B) Interpreted (or partially interpreted) languages
C) Machine languages
D) Assembly languages

**Correct Answer: B**

**Q736. Interpreted code is more portable because:**

A) It runs on specific hardware only
B) The source code can run on any machine with the appropriate interpreter
C) It generates machine-specific binaries
D) It has no source code

**Correct Answer: B**

**Q737. An interpreter must be present:**

A) Only during compilation
B) Every time the interpreted program is run
C) Only during installation
D) Never

**Correct Answer: B**

**Q738. JIT (Just-In-Time) compilation combines benefits of:**

A) Only interpretation
B) Both interpretation and compilation for improved performance
C) Only compilation
D) Neither interpretation nor compilation

**Correct Answer: B**

***Differences Among All Three***

**Q739. An assembler works with which type of language?**

A) High-level language
B) Assembly (low-level) language
C) Markup language
D) Natural language

**Correct Answer: B**

**Q740. A compiler works with which type of language?**

A) Assembly language only
B) High-level languages like C, C++
C) Only machine code
D) Only HTML

**Correct Answer: B**

**Q741. An interpreter works with which type of language?**

A) Only assembly language
B) High-level languages like Python, Ruby
C) Only machine code
D) Only binary

**Correct Answer: B**

**Q742. Which translator converts the entire program before execution?**

A) Interpreter
B) Assembler and Compiler
C) Neither
D) Only the debugger

**Correct Answer: B**

**Q743. Which translator converts and executes code line by line?**

A) Compiler
B) Assembler
C) Interpreter
D) Linker

**Correct Answer: C**

**Q744. After successful compilation, the original source code is:**

A) Required every time the program runs
B) Not required to run the executable
C) Automatically deleted
D) Converted to a PDF

**Correct Answer: B**

**Q745. After interpretation, there is:**

A) A standalone executable file
B) No separate executable; the interpreter must be present to run the program
C) A compiled binary always
D) A printed document

**Correct Answer: B**

**Q746. Compilation produces code that runs:**

A) Slower than interpreted code generally
B) Faster than interpreted code generally
C) At the same speed as interpreted code
D) Not at all

**Correct Answer: B**

**Q747. Error detection in a compiler happens:**

A) Line by line during execution
B) During compilation, before the program runs
C) Only after the program has run completely
D) It never detects errors

**Correct Answer: B**

**Q748. Error detection in an interpreter happens:**

A) All at once before execution
B) When the problematic line is reached during execution
C) Never
D) Only during printing

**Correct Answer: B**

**Q749. Assembly language is closest in structure to:**

A) English prose
B) Machine code
C) Python
D) HTML

**Correct Answer: B**

**Q750. High-level languages are designed to be:**

A) Hard for humans to read
B) Closer to human language and easier for programmers
C) Identical to machine code
D) Only usable by machines

**Correct Answer: B**

**Q751. The correct mapping is: Assembler -> Assembly; Compiler -> ?**

A) Machine code directly
B) High-level language (like C, C++, Java)
C) Only Python
D) Only HTML

**Correct Answer: B**

**Q752. Which combination is correct?**

A) Compiler: line by line; Interpreter: all at once
B) Compiler: entire program at once; Interpreter: line by line
C) Both work identically
D) Neither translates code

**Correct Answer: B**

**Q753. A program that converts a high-level language directly into machine code in one pass is an example of a:**

A) Interpreter
B) Compiler
C) Assembler
D) Debugger

**Correct Answer: B**

**Q754. For rapid prototyping and testing, which approach is preferred?**

A) Compilation (slower cycle of edit-compile-run)
B) Interpretation (quick edit-run cycle with immediate feedback)
C) Neither approach works
D) Assembly language only

**Correct Answer: B**

**Q755. For performance-critical production software, which approach is preferred?**

A) Interpretation for maximum speed
B) Compilation for optimized native machine code
C) Neither approach
D) Manual binary editing

**Correct Answer: B**

**Q756. Some languages like Java use both compilation and interpretation because:**

A) They cannot decide which to use
B) Source code is compiled to bytecode, then interpreted/JIT-compiled by the JVM
C) They only run on paper
D) Neither technique works for Java

**Correct Answer: B**

**Q757. The role of any programming translator is to convert:**

A) Hardware to software
B) Human-readable code into machine-executable instructions
C) Electricity into code
D) Paper into digital format

**Correct Answer: B**

**Q758. Without translators, programmers would have to write programs in:**

A) Python
B) Raw binary machine code (0s and 1s)
C) English
D) HTML

**Correct Answer: B**

## Cloud Computing

### *Definition of Cloud Computing*

**Q759. NIST identifies how many essential characteristics of cloud computing?**

A) Three
B) Five
C) Ten
D) Seven

**Correct Answer: B**

**Q760. Rapid elasticity is a cloud characteristic that allows resources to be:**

A) Fixed permanently
B) Scaled rapidly outward and inward based on demand
C) Deleted automatically every week
D) Only used once

**Correct Answer: B**

### *Cloud Storage Concept*

**Q761. Which company offers Google Cloud Storage for enterprise data?**

A) Microsoft
B) Amazon
C) Google
D) IBM

**Correct Answer: C**

**Q762. End-to-end encryption in cloud storage ensures:**

A) Anyone can read the data
B) Data is encrypted during transfer and while stored
C) Data is never stored
D) Only the provider can read data

**Correct Answer: B**

### *Examples of Cloud Usage*

**Q763. Using Canva online to design posters is an example of:**

A) Local computing only
B) Cloud-based SaaS
C) Hardware usage
D) Manual design

**Correct Answer: B**

**Q764. WhatsApp stores chat backups on:**

A) The SIM card only
B) Cloud services like Google Drive or iCloud
C) The phone battery
D) The charger

**Correct Answer: B**

### *Advantages of Cloud Computing*

**Q765. Cloud computing supports remote work by providing:**

A) No access to any tools
B) Access to work tools and data from any location
C) Only office-based access
D) Only printing capability

**Correct Answer: B**

**Q766. Multi-region deployment in cloud computing ensures:**

A) All data is in one room
B) High availability even if one region goes down
C) Slower performance
D) No data storage

**Correct Answer: B**

### *Pay-per-use Model*

**Q767. Cloud providers use dashboards to help customers:**

A) Ignore their bills
B) Monitor and control their cloud spending in real time
C) Hide their usage
D) Delete their accounts

**Correct Answer: B**

### *Remote Access Concept*

**Q768. Single Sign-On (SSO) simplifies cloud remote access by:**

A) Requiring separate passwords for every app
B) Allowing users to log in once to access multiple cloud services
C) Disabling all security
D) Requiring no login at all

**Correct Answer: B**

## Cloud Service Providers

### *Amazon Web Services (AWS)*

**Q769. AWS CloudFormation is used for:**

A) Weather forecasting
B) Infrastructure as Code to automate resource provisioning
C) Email marketing
D) Video editing

**Correct Answer: B**

**Q770. Amazon Glacier is designed for:**

A) Real-time data processing
B) Low-cost long-term archival storage
C) Video streaming
D) Gaming

**Correct Answer: B**

### *Microsoft Azure*

**Q771. Azure Logic Apps is used for:**

A) Photo editing
B) Automating workflows and integrating apps without code
C) Gaming
D) Music production

**Correct Answer: B**

**Q772. Azure CDN stands for:**

A) Content Design Network
B) Content Delivery Network
C) Computer Data Node
D) Central Domain Name

**Correct Answer: B**

### *Difference: AWS vs Azure*

**Q773. Google Cloud Platform (GCP) is the third-largest cloud provider after:**

A) IBM and Oracle
B) AWS and Azure
C) Apple and Samsung
D) Dell and HP

**Correct Answer: B**

**Q774. Multi-cloud strategy means using:**

A) Only one cloud provider
B) Services from multiple cloud providers simultaneously
C) No cloud at all
D) Only on-premise servers

**Correct Answer: B**

## Cloud Service Models

### *SaaS - Definition*

**Q775. In SaaS, software updates are handled by:**

A) Each individual user manually
B) The SaaS provider, applied automatically for all users
C) The hardware manufacturer
D) No one

**Correct Answer: B**

### *SaaS Examples*

**Q776. GitHub, a code hosting platform, operates as:**

A) IaaS
B) PaaS only
C) SaaS
D) Hardware

**Correct Answer: C**

**Q777. Notion, a productivity tool, is classified as:**

A) SaaS
B) IaaS
C) PaaS
D) A hardware device

**Correct Answer: A**

### *PaaS - Definition*

**Q778. PaaS abstracts away infrastructure management so developers can focus on:**

A) Hardware procurement
B) Writing and deploying application code
C) Cable management
D) Server room maintenance

**Correct Answer: B**

### *PaaS Examples*

**Q779. Render and Railway are modern examples of:**

A) IaaS providers
B) PaaS platforms for deploying web applications
C) Email clients
D) Operating systems

**Correct Answer: B**

### *IaaS - Definition*

**Q780. Digital Ocean Droplets provide virtual servers and are an example of:**

A) SaaS
B) PaaS
C) IaaS
D) FaaS

**Correct Answer: C**

**Q781. Linode is a cloud provider known for its:**

A) SaaS applications
B) IaaS offerings like virtual servers and storage
C) Social media platform
D) Gaming console

**Correct Answer: B**

### *Difference: SaaS vs PaaS vs IaaS*

**Q782. FaaS (Function as a Service) is a subset of:**

A) SaaS
B) IaaS
C) PaaS / Serverless computing
D) Hardware

**Correct Answer: C**

**Q783. BaaS (Backend as a Service) provides:**

A) Physical backend hardware
B) Pre-built backend features like databases, auth, and push notifications
C) Only email services
D) Only file hosting

**Correct Answer: B**

**Q784. The shared responsibility model in cloud defines:**

A) That the customer does everything
B) Which security tasks belong to the provider vs the customer depending on the service model
C) That the provider does everything always
D) That neither party has responsibility

**Correct Answer: B**

## Cloud Deployment Models

### *Public Cloud*

**Q785. The public cloud follows a shared tenancy model where:**

A) Each user owns the physical hardware
B) Resources are shared among many users securely
C) Only one user exists
D) No sharing occurs

**Correct Answer: B**

### *Private Cloud*

**Q786. A virtual private cloud (VPC) within a public cloud provides:**

A) No isolation at all
B) An isolated virtual network for a single customer within a public cloud
C) A physical private data center
D) A home network

**Correct Answer: B**

### *Hybrid Cloud*

**Q787. Data residency requirements may push organizations toward hybrid cloud to:**

A) Store all data publicly
B) Keep sensitive data on-premises while using cloud for other workloads
C) Delete all data
D) Use social media for storage

**Correct Answer: B**

### *Use-case Based Differences*

**Q788. A media company streaming content globally while keeping editorial systems private uses:**

A) Only public cloud
B) Only private cloud
C) Hybrid cloud
D) No cloud at all

**Correct Answer: C**

**Q789. Multi-cloud deploys workloads across:**

A) Zero providers
B) One provider only
C) Multiple cloud providers like AWS and Azure simultaneously
D) No technology

**Correct Answer: C**

## Virtualization & Architecture

### *Virtualization Definition*

**Q790. Containerization (e.g., Docker) is an alternative to full virtualization that:**

A) Uses more resources than VMs
B) Shares the host OS kernel, making containers lightweight
C) Requires a separate hypervisor for each container
D) Uses no computing resources

**Correct Answer: B**

**Q791. A snapshot of a virtual machine captures:**

A) A photograph of the physical server
B) The complete state of the VM at a point in time for backup or rollback
C) Only the network settings
D) Only the display resolution

**Correct Answer: B**

### *Hypervisor Definition*

**Q792. Xen is a Type 1 hypervisor used by:**

A) Only home computers
B) AWS (historically) and Citrix
C) Only printers
D) Only cameras

**Correct Answer: B**

**Q793. Proxmox is an open-source platform that supports:**

A) Only gaming
B) Both KVM virtual machines and LXC containers
C) Only email
D) Only printing

**Correct Answer: B**

### *Role of Hypervisor in IaaS*

**Q794. Live migration allows a running VM to be moved between physical hosts:**

A) Only when turned off
B) Without downtime, while the VM continues running
C) Only by deleting it first
D) Only once per year

**Correct Answer: B**

### *Single Physical Resource Sharing*

**Q795. Resource overcommitment allows virtual allocations to exceed physical capacity because:**

A) Not all VMs use maximum resources simultaneously
B) Physical resources are unlimited
C) No monitoring is needed
D) Each VM has its own data center

**Correct Answer: A**

### *Virtual Machine Isolation*

**Q796. Security groups and micro-segmentation in cloud enforce:**

A) No security at all
B) Fine-grained network isolation between virtual workloads
C) Universal access for everyone
D) Physical walls between servers

**Correct Answer: B**

## Utility & Grid Computing

### *Utility Computing Definition*

**Q797. Amazon Web Services is a modern realization of the utility computing vision because:**

A) It sells physical hardware only
B) It provides computing resources on demand with metered billing
C) It has no billing system
D) It only offers free services

**Correct Answer: B**

### *Pay-per-use Concept*

**Q798. Reserved instances in cloud provide discounts for:**

A) No commitment at all
B) Committing to a certain usage level over a period
C) Using resources for free
D) Only one hour of usage

**Correct Answer: B**

### *Grid Computing Definition*

**Q799. Folding@home is a grid computing project that:**

A) Folds paper digitally
B) Uses distributed volunteer computers to simulate protein folding for disease research
C) Only sorts files
D) Only sends emails

**Correct Answer: B**

### *Heterogeneous Resources*

**Q800. Middleware like Globus enables grid computing across heterogeneous systems by providing:**

A) Physical standardization of hardware
B) A standard software layer for resource discovery, job management, and security
C) No software at all
D) Only email service

**Correct Answer: B**

### *Geographically Dispersed Systems*

**Q801. The Large Hadron Collider (LHC) Computing Grid connects institutions in:**

A) Only one city
B) Over 40 countries worldwide
C) Only two buildings
D) No locations

**Correct Answer: B**

### *Difference: Grid vs Cloud*

**Q802. Cloud computing offers better self-service interfaces than grid computing through:**

A) Physical buttons
B) Web-based consoles, CLIs, and APIs
C) Postal mail requests
D) Telephone-only service

**Correct Answer: B**

**Q803. Grid computing focuses on batch processing while cloud computing also supports:**

A) Only batch processing
B) Real-time interactive applications and services
C) Only paper-based outputs
D) Only backup operations

**Correct Answer: B**

## SOA & Managed Services

### *Service-Oriented Architecture (SOA)*

**Q804. Microservices architecture evolved from SOA and differs by using:**

A) Larger monolithic services
B) Small, independently deployable services with lightweight protocols
C) No services at all
D) Only one service per company

**Correct Answer: B**

**Q805. API Gateway in SOA and microservices is used to:**

A) Block all traffic
B) Manage, route, and secure API requests between clients and services
C) Only store data
D) Only print reports

**Correct Answer: B**

### *Managed IT Services*

**Q806. NOC (Network Operations Center) in managed services:**

A) Monitors and manages network performance 24/7
B) Only sells hardware
C) Only designs logos
D) Only writes blog posts

**Correct Answer: A**

**Q807. Managed backup services ensure:**

A) No backups are ever taken
B) Regular automated backups with tested recovery procedures
C) Only manual paper copies
D) Backups happen once a decade

**Correct Answer: B**

### *Client-Server Model*

**Q808. A proxy server in client-server architecture acts as:**

A) A replacement for the client
B) An intermediary between clients and servers for security and caching
C) The main database
D) A keyboard replacement

**Correct Answer: B**

**Q809. A DNS server resolves:**

A) Physical addresses of buildings
B) Domain names to IP addresses so clients can reach servers
C) Only email addresses
D) Only phone numbers

**Correct Answer: B**

## Client & GUI

### *Client Definition*

**Q810. A smart TV streaming Netflix acts as a:**

A) Server
B) Client requesting content from Netflix servers
C) Router
D) Switch

**Correct Answer: B**

**Q811. Chromebooks are thin client devices because they rely primarily on:**

A) Local heavy processing
B) Cloud-based applications and storage
C) No external services
D) Only offline apps

**Correct Answer: B**

### *GUI Definition*

**Q812. A dialog box in a GUI is:**

A) A text-only command line
B) A small window that prompts the user for input or displays information
C) A physical box
D) A type of printer

**Correct Answer: B**

**Q813. A GUI toolbar contains:**

A) Physical tools
B) Buttons and icons for quick access to frequently used commands
C) Only text
D) Only advertisements

**Correct Answer: B**

### *Application Layer Role*

**Q814. DHCP at the application layer assigns:**

A) Physical addresses to buildings
B) IP addresses to devices on a network automatically
C) Only email addresses
D) Only web addresses

**Correct Answer: B**

**Q815. NTP (Network Time Protocol) at the application layer synchronizes:**

A) Data files only
B) Clock times across computers in a network
C) Printer queues only
D) Only download speeds

**Correct Answer: B**

### *Client-Server Interaction*

**Q816. WebSocket enables:**

A) Only one-way communication
B) Full-duplex (two-way) real-time communication between client and server
C) No communication at all
D) Only physical connections

**Correct Answer: B**

**Q817. Caching on the client side reduces server load by:**

A) Deleting all local data
B) Storing frequently accessed data locally to avoid repeated server requests
C) Sending more requests to the server
D) Ignoring the server completely

**Correct Answer: B**

## Memory

### *Primary Memory (RAM)*

**Q818. ECC RAM (Error-Correcting Code) is used in servers because it:**

A) Is cheaper than regular RAM
B) Detects and corrects single-bit memory errors for reliability
C) Is only for gaming
D) Has no error detection capability

**Correct Answer: B**

**Q819. SO-DIMM is a smaller RAM form factor used in:**

A) Desktop towers only
B) Laptops and small form factor computers
C) Printers
D) Calculators

**Correct Answer: B**

### *Secondary Memory*

**Q820. NVMe is a storage protocol designed for:**

A) Floppy disks
B) High-speed SSDs connected via PCIe interface
C) Magnetic tapes only
D) Paper storage

**Correct Answer: B**

**Q821. RAID (Redundant Array of Independent Disks) is used to:**

A) Play music
B) Improve storage performance and/or provide data redundancy
C) Only delete files
D) Only compress images

**Correct Answer: B**

### *Magnetic Tape*

**Q822. Tape autoloaders differ from tape libraries in that autoloaders are:**

A) Larger and hold more tapes
B) Smaller, holding fewer tapes with simpler robotics
C) Not used for tape at all
D) Identical to libraries

**Correct Answer: B**

**Q823. Data written to magnetic tape is organized in:**

A) Random patterns
B) Linear tracks along the length of the tape
C) Circular patterns like a CD
D) No patterns at all

**Correct Answer: B**

### *Hard Disk*

**Q824. The actuator arm in an HDD moves the read/write head to:**

A) The power supply
B) The correct track on the platter to read or write data
C) The USB port
D) The keyboard

**Correct Answer: B**

**Q825. A partition on a hard disk is:**

A) A physical crack in the disk
B) A logically separated section of the disk treated as a separate volume
C) A type of virus
D) A display setting

**Correct Answer: B**

### *Floppy Disk*

**Q826. The write-protect tab on a floppy disk:**

A) Increases storage capacity
B) Prevents data from being written or deleted
C) Formats the disk automatically
D) Changes the disk color

**Correct Answer: B**

### *RAM vs Secondary Memory*

**Q827. The memory hierarchy from fastest to slowest is:**

A) Hard disk -> RAM -> Cache -> CPU Registers
B) CPU Registers -> Cache -> RAM -> Secondary Storage
C) Secondary Storage -> RAM -> CPU Registers -> Cache
D) RAM -> CPU Registers -> Cache -> Hard disk

**Correct Answer: B**

## Input/Output Devices

### *Laser Printer*

**Q828. PostScript and PCL are page description languages used by laser printers to:**

A) Connect to the internet
B) Interpret and render print jobs accurately
C) Play music
D) Store photos

**Correct Answer: B**

**Q829. A multifunction laser printer (MFP) can:**

A) Only print
B) Print, scan, copy, and sometimes fax
C) Only scan
D) Only copy

**Correct Answer: B**

### *Printer Speed (PPM)*

**Q830. Warm-up time in laser printers refers to:**

A) Time to unpack the printer
B) Time for the fuser to reach operating temperature before printing starts
C) Time to refill toner
D) Time to connect to Wi-Fi

**Correct Answer: B**

### *DPI vs PPM*

**Q831. A large format plotter typically has high DPI but lower PPM because:**

A) It prints on small paper
B) Large detailed prints require more time per page
C) It never prints anything
D) It only prints fast drafts

**Correct Answer: B**

## Keyboard & Hardware

### *ESC Key*

**Q832. In many programming IDEs, ESC is used to:**

A) Compile code
B) Close autocomplete suggestions or dismiss popups
C) Run the program
D) Save the file

**Correct Answer: B**

### *Enter Key*

**Q833. In chat applications, pressing Enter usually:**

A) Deletes the message
B) Sends the message
C) Closes the chat
D) Opens settings

**Correct Answer: B**

### *Delete Key*

**Q834. Fn + Backspace on some compact keyboards acts as the:**

A) Escape key
B) Delete key
C) Enter key
D) Tab key

**Correct Answer: B**

### *Insert Key*

**Q835. The status bar in some text editors shows OVR when:**

A) The file is read-only
B) Overtype mode is active (Insert key toggled)
C) The file is new
D) The printer is connected

**Correct Answer: B**

## Computer Hardware Basics

### *Semiconductor Definition*

**Q836. A MOSFET (Metal-Oxide-Semiconductor Field-Effect Transistor) is the basic building block of:**

A) Paper circuits
B) Modern digital integrated circuits
C) Wooden structures
D) Glass products

**Correct Answer: B**

**Q837. Gallium Arsenide (GaAs) is a semiconductor used in:**

A) Only light switches
B) High-speed electronics and optoelectronic devices
C) Only paper products
D) Only wooden structures

**Correct Answer: B**

### *Chip Manufacturing Concept*

**Q838. Die size in chip manufacturing refers to:**

A) The physical size of a single chip cut from a silicon wafer
B) The size of the packaging box
C) The color of the chip
D) The weight of the chip

**Correct Answer: A**

**Q839. Yield in chip manufacturing is the percentage of:**

A) Workers in the factory
B) Functional chips produced from a wafer out of total chips
C) Wafers that are round
D) Boxes that are shipped

**Correct Answer: B**

**Q840. A system-on-chip (SoC) integrates:**

A) Only a CPU
B) CPU, GPU, memory controller, and other components on a single chip
C) Only storage
D) Only networking

**Correct Answer: B**

## Types of Computers

### *Analog Computer*

**Q841. An analog voltmeter using a needle to display voltage is an:**

A) Digital device
B) Analog measurement device
C) Hybrid device
D) No computing device

**Correct Answer: B**

**Q842. Tide prediction machines of the early 20th century were:**

A) Digital computers
B) Analog computers
C) Quantum computers
D) No computers

**Correct Answer: B**

### *Digital Computer*

**Q843. A 64-bit processor can handle data in chunks of:**

A) 8 bits
B) 16 bits
C) 32 bits
D) 64 bits

**Correct Answer: D**

**Q844. The Von Neumann architecture describes a digital computer with:**

A) No memory at all
B) A stored program concept with CPU, memory, and I/O
C) Only analog circuits
D) Only output devices

**Correct Answer: B**

**Q845. A supercomputer is a type of digital computer designed for:**

A) Simple text editing
B) Extremely fast processing of complex calculations
C) Only email
D) Only web browsing

**Correct Answer: B**

### *Hybrid Computer*

**Q846. The Analog-to-Digital Converter (ADC) in a hybrid computer converts:**

A) Digital signals to analog
B) Continuous analog signals to discrete digital values
C) Text to images
D) Sound to light

**Correct Answer: B**

### *Hybrid Computer Use-cases*

**Q847. Smart home thermostats are hybrid because they:**

A) Only display temperature
B) Measure analog temperature and digitally control heating/cooling systems
C) Only play music
D) Only connect to Wi-Fi

**Correct Answer: B**

**Q848. Modern audio recording uses hybrid computing to:**

A) Only play CDs
B) Capture analog sound waves and convert them to digital format
C) Only print lyrics
D) Only store physical tapes

**Correct Answer: B**

## Storage & Processing

### *Sequential Access Devices*

**Q849. Random access memory (RAM) allows any byte to be accessed without reading preceding bytes, unlike:**

A) SSD
B) Sequential access devices like magnetic tape
C) Other RAM modules
D) The CPU

**Correct Answer: B**

**Q850. Direct access storage devices (DASD) like hard disks use:**

A) Strictly sequential access
B) A combination of direct positioning and short sequential reads
C) No access at all
D) Only cloud access

**Correct Answer: B**

### *Magnetic Tape Usage*

**Q851. The 3-2-1 backup rule recommends keeping at least one backup copy on:**

A) The same computer only
B) An offsite medium like magnetic tape for disaster recovery
C) A sticky note
D) The monitor screen

**Correct Answer: B**

**Q852. Tape encryption protects stored data by:**

A) Making the tape physically heavier
B) Encrypting data before writing it to tape so unauthorized access is prevented
C) Changing the tape color
D) Making the tape unreadable by anyone

**Correct Answer: B**

**Q853. Tape is considered green storage because:**

A) Tapes are colored green
B) Idle tapes consume zero power compared to spinning disks
C) They are made from plants
D) They generate electricity

**Correct Answer: B**

## Programming Translators

### *Assembler*

**Q854. Inline assembly allows programmers to:**

A) Write only in Python
B) Embed assembly instructions within high-level language code for performance
C) Only use HTML
D) Avoid all programming

**Correct Answer: B**

**Q855. A disassembler performs the reverse of an assembler by converting:**

A) Assembly to machine code
B) Machine code back to assembly language for analysis
C) HTML to CSS
D) English to French

**Correct Answer: B**

### *Compiler*

**Q856. Ahead-of-Time (AOT) compilation means:**

A) Compilation happens during runtime
B) The entire program is compiled before execution for maximum performance
C) No compilation occurs
D) Only partial compilation happens

**Correct Answer: B**

**Q857. A lexer (lexical analyzer) in a compiler breaks source code into:**

A) Physical pieces
B) Tokens (keywords, identifiers, operators, literals)
C) Paper strips
D) Random characters

**Correct Answer: B**

**Q858. A parser in a compiler checks:**

A) Only spelling
B) Whether the token sequence follows the grammar rules of the language
C) Only file size
D) Only file extension

**Correct Answer: B**

**Q859. An abstract syntax tree (AST) represents:**

A) A physical tree
B) The hierarchical structure of the source code after parsing
C) A file directory
D) A network topology

**Correct Answer: B**

### *Interpreter*

**Q860. CPython is the default interpreter for:**

A) C language
B) Python
C) Java
D) Ruby

**Correct Answer: B**

**Q861. PyPy is an alternative Python interpreter that uses JIT compilation to:**

A) Slow down programs
B) Speed up Python execution compared to CPython
C) Remove all features
D) Only work offline

**Correct Answer: B**

**Q862. An interpreted language's source code is distributed instead of binaries, which means:**

A) Source code is hidden from everyone
B) Users can see and modify the source code
C) The code never runs
D) The code is encrypted always

**Correct Answer: B**

### *Differences Among All Three*

**Q863. Bytecode is an intermediate form used by languages like Java and Python that is executed by a:**

A) Physical machine directly
B) Virtual machine or interpreter
C) Paper printer
D) Analog computer

**Correct Answer: B**

**Q864. Transpilers convert source code from one high-level language to:**

A) Machine code directly
B) Another high-level language (e.g., TypeScript to JavaScript)
C) Assembly language
D) Binary only

**Correct Answer: B**

**Q865. A debugger is NOT a translator but helps programmers find:**

A) New features to add
B) Bugs and errors in the code during execution
C) New employees
D) The internet

**Correct Answer: B**

## Computer Hardware Basics

### *Semiconductor Definition*

**Q866. Silicon-on-Insulator (SOI) technology improves chip performance by:**

A) Adding more weight
B) Reducing parasitic capacitance for faster switching
C) Making chips larger
D) Only changing the color

**Correct Answer: B**

## Cloud Computing

### *Definition of Cloud Computing*

**Q867. Serverless computing does NOT mean there are no servers; it means:**

A) Servers are physically absent
B) Server management is abstracted away from the developer
C) Only one server exists worldwide
D) Servers run without electricity

**Correct Answer: B**

### *Advantages of Cloud Computing*

**Q868. Cloud computing enables DevOps practices by providing:**

A) No automation tools
B) Infrastructure automation, CI/CD pipelines, and scalable environments
C) Only manual deployments
D) Only paper-based tracking

**Correct Answer: B**

## Cloud Service Models

### *Difference: SaaS vs PaaS vs IaaS*

**Q869. CaaS (Container as a Service) provides:**

A) Only email containers
B) Container orchestration and management as a cloud service
C) Physical shipping containers
D) Only storage containers

**Correct Answer: B**

## Cloud Deployment Models

### *Hybrid Cloud*

**Q870. Latency-sensitive applications in hybrid cloud keep compute resources:**

A) Only in the public cloud far away
B) Close to the data source, often on-premises or at edge locations
C) Only in space
D) Nowhere at all

**Correct Answer: B**

## Virtualization & Architecture

### *Virtualization Definition*

**Q871. GPU virtualization allows multiple VMs to share:**

A) Only CPU resources
B) A single physical GPU for graphics and compute workloads
C) Only storage
D) Only networking

**Correct Answer: B**

## Memory

### *Primary Memory (RAM)*

**Q872. Dual-channel RAM improves performance by:**

A) Using only one memory slot
B) Doubling the bandwidth by using two memory channels simultaneously
C) Halving the RAM capacity
D) Removing error correction

**Correct Answer: B**

### *Secondary Memory*

**Q873. M.2 is a form factor for SSDs that connects directly to the motherboard via:**

A) USB cable
B) M.2 slot supporting NVMe or SATA protocols
C) Audio jack
D) HDMI port

**Correct Answer: B**

### *Hard Disk*

**Q874. Helium-filled HDDs improve performance by:**

A) Adding weight
B) Reducing internal air resistance, allowing thinner platters and higher capacity
C) Making the drive louder
D) Increasing heat generation

**Correct Answer: B**

### *RAM vs Secondary Memory*

**Q875. Optane Memory by Intel bridges the gap between RAM and storage by providing:**

A) No speed improvement
B) Very fast non-volatile storage that accelerates frequently accessed data
C) Only RAM replacement
D) Only tape backup

**Correct Answer: B**

## Input/Output Devices

### *Laser Printer*

**Q876. A laser printer drum unit needs replacement when:**

A) The printer is brand new
B) Print quality degrades with streaks or faded areas
C) The toner is full
D) The paper tray is empty

**Correct Answer: B**

### *DPI vs PPM*

**Q877. Effective DPI may differ from optical DPI because:**

A) They are always identical
B) Software interpolation can enhance apparent resolution beyond hardware capability
C) DPI cannot be measured
D) PPM determines DPI

**Correct Answer: B**

## Keyboard & Hardware

### *ESC Key*

**Q878. In PowerPoint presentation mode, pressing ESC:**

A) Starts the slideshow
B) Exits the slideshow and returns to editing mode
C) Prints the slides
D) Deletes all slides

**Correct Answer: B**

### *Enter Key*

**Q879. Alt + Enter in Excel lets you:**

A) Delete a cell
B) Insert a line break within a cell
C) Exit Excel
D) Print the sheet

**Correct Answer: B**

## Types of Computers

### *Digital Computer*

**Q880. An embedded system is a specialized digital computer found in:**

A) Only supercomputers
B) Everyday devices like washing machines, cars, and microwaves
C) Only laptops
D) Only servers

**Correct Answer: B**

**Q881. A mainframe computer is designed for:**

A) Personal gaming
B) Large-scale data processing for enterprises and governments
C) Only home use
D) Only mobile computing

**Correct Answer: B**

## Storage & Processing

### *Sequential Access Devices*

**Q882. Streaming media on the internet uses sequential delivery where data arrives:**

A) All at once instantly
B) In order from beginning to end for continuous playback
C) In random order
D) Backwards only

**Correct Answer: B**

### *Magnetic Tape Usage*

**Q883. Linear Tape File System (LTFS) allows magnetic tape to be:**

A) Used only with proprietary software
B) Accessed like a regular disk drive with drag-and-drop file operations
C) Read by any web browser
D) Only used for audio recording

**Correct Answer: B**

## Programming Translators

### *Compiler*

**Q884. LLVM is a compiler infrastructure used by languages like Swift and Rust for:**

A) Only text formatting
B) Generating optimized intermediate representation and machine code
C) Only sending emails
D) Only database management

**Correct Answer: B**

### *Interpreter*

**Q885. Node.js uses the V8 engine which employs JIT compilation to execute:**

A) Only Python code
B) JavaScript code at near-native performance
C) Only HTML
D) Only CSS

**Correct Answer: B**

### *Differences Among All Three*

**Q886. The choice between compiling and interpreting depends on priorities like:**

A) Only the programmer's name
B) Execution speed, development speed, portability, and debugging ease
C) Only the computer's color
D) Only the time of day

**Correct Answer: B**

## Cloud Computing

### *Cloud Storage Concept*

**Q887. Object storage like Amazon S3 stores data as objects rather than:**

A) Nothing
B) Hierarchical file systems or block storage
C) Only images
D) Only text

**Correct Answer: B**

### *Advantages of Cloud Computing*

**Q888. Compliance certifications like SOC 2, ISO 27001, and HIPAA are offered by cloud providers to:**

A) Increase confusion
B) Assure customers that security and privacy standards are met
C) Avoid all security measures
D) Only for marketing purposes

**Correct Answer: B**

## Cloud Service Providers

### *Amazon Web Services (AWS)*

**Q889. AWS Well-Architected Framework provides guidance on:**

A) Building physical buildings
B) Designing reliable, secure, efficient, and cost-effective cloud systems
C) Only pricing information
D) Only employee management

**Correct Answer: B**

### *Microsoft Azure*

**Q890. Azure Sentinel is a cloud-native:**

A) Word processor
B) Security information and event management (SIEM) solution
C) Email client
D) Photo editor

**Correct Answer: B**

## SOA & Managed Services

### *Service-Oriented Architecture (SOA)*

**Q891. Service mesh in modern architectures manages:**

A) Physical server placement
B) Service-to-service communication, observability, and security
C) Only email routing
D) Only file storage

**Correct Answer: B**

### *Managed IT Services*

**Q892. A managed service provider's helpdesk offers:**

A) Only hardware sales
B) First-line technical support for end users
C) Only catering services
D) Only travel booking

**Correct Answer: B**

## Client & GUI

### *GUI Definition*

**Q893. Accessibility features in GUIs include:**

A) Removing all visual elements
B) Screen readers, high contrast modes, and keyboard navigation support
C) Only using command line
D) Only physical buttons

**Correct Answer: B**

### *Client-Server Interaction*

**Q894. GraphQL is an alternative to REST APIs that allows clients to:**

A) Only receive fixed data structures
B) Request exactly the data they need in a single query
C) Avoid all communication with servers
D) Only send data, never receive

**Correct Answer: B**

## Memory

### *Primary Memory (RAM)*

**Q895. LPDDR5 is a type of RAM optimized for:**

A) Desktop computers only
B) Mobile devices with low power consumption
C) Printers
D) Speakers

**Correct Answer: B**

### *Secondary Memory*

**Q896. Cloud storage can be considered virtual secondary storage because:**

A) It uses physical disks at the user's location
B) Data is stored on remote servers but appears as accessible storage to the user
C) No data is stored anywhere
D) It only stores data temporarily

**Correct Answer: B**

## Input/Output Devices

### *Laser Printer*

**Q897. Network-capable laser printers connect via:**

A) Only USB
B) Ethernet or Wi-Fi for shared access across multiple computers
C) Only Bluetooth
D) Only infrared

**Correct Answer: B**

## Keyboard & Hardware

### *Delete Key*

**Q898. In macOS, the Delete key (labeled delete) functions as:**

A) The Windows Delete key
B) Backspace (removing characters to the left of the cursor)
C) Enter key
D) Escape key

**Correct Answer: B**

## Computer Hardware Basics

### *Chip Manufacturing Concept*

**Q899. The semiconductor shortage of 2020-2023 affected industries including:**

A) Only toy manufacturing
B) Automotive, consumer electronics, and computing
C) Only food production
D) Only textile manufacturing

**Correct Answer: B**

## Types of Computers

### *Hybrid Computer Use-cases*

**Q900. A digital oscilloscope is a hybrid device that captures analog electrical signals and:**

A) Only stores them on paper
B) Displays them as digital waveforms on a screen for analysis
C) Only deletes them
D) Only prints them

**Correct Answer: B**

## Storage & Processing

### *Magnetic Tape Usage*

**Q901. Many cloud data centers still use magnetic tape for their cold storage tiers because of:**

A) Speed advantages over SSD
B) Extremely low cost per terabyte and long-term durability
C) Faster random access than HDDs
D) Small physical size

**Correct Answer: B**

## Programming Translators

### *Assembler*

**Q902. Device drivers may use assembly language for:**

A) Only web browsing
B) Direct hardware access and performance-critical code sections
C) Only database queries
D) Only user interfaces

**Correct Answer: B**

### *Compiler*

**Q903. Rust is a compiled language known for:**

A) Being slow and unsafe
B) Memory safety without garbage collection and high performance
C) Only running on one platform
D) Being interpreted

**Correct Answer: B**

### *Interpreter*

**Q904. The Lua interpreter is popular in:**

A) Only enterprise databases
B) Game development for embedded scripting
C) Only web browsers
D) Only medical devices

**Correct Answer: B**

## Cloud Computing

### *Definition of Cloud Computing*

**Q905. Edge computing extends cloud computing by:**

A) Moving all processing to the central cloud
B) Processing data closer to the source for lower latency
C) Eliminating all computing
D) Only using mainframes

**Correct Answer: B**

### *Remote Access Concept*

**Q906. Zero Trust security in cloud remote access means:**

A) Everyone is trusted by default
B) No user or device is trusted by default; continuous verification is required
C) Security is not needed
D) Only internal users need authentication

**Correct Answer: B**

## Cloud Service Models

### *SaaS - Definition*

**Q907. Vertical SaaS serves:**

A) All industries equally
B) A specific industry like healthcare, education, or finance
C) Only the technology sector
D) Only government agencies

**Correct Answer: B**

## Cloud Deployment Models

### *Public Cloud*

**Q908. Sovereign cloud provides public cloud services that comply with:**

A) No regulations
B) A specific country's data sovereignty and regulatory requirements
C) Only US regulations
D) Only EU regulations

**Correct Answer: B**

## Virtualization & Architecture

### *Virtual Machine Isolation*

**Q909. Side-channel attacks exploit shared hardware to potentially:**

A) Improve performance
B) Extract data from other VMs on the same physical host
C) Speed up all VMs
D) Fix hardware bugs

**Correct Answer: B**

## Memory

### *Secondary Memory*

**Q910. QLC (Quad-Level Cell) NAND flash stores how many bits per cell?**

A) 1 bit
B) 2 bits
C) 3 bits
D) 4 bits

**Correct Answer: D**

## Input/Output Devices

### *Printer Speed (PPM)*

**Q911. Production-class printers used in publishing can exceed:**

A) 10 PPM
B) 50 PPM
C) 100 PPM easily, some reaching thousands per hour
D) 5 PPM maximum

**Correct Answer: C**

## Computer Hardware Basics

### *Semiconductor Definition*

**Q912. Quantum computing aims to use quantum bits (qubits) which differ from semiconductor transistors by:**

A) Being identical in function
B) Existing in superposition states of 0 and 1 simultaneously
C) Being larger than transistors
D) Using only analog signals

**Correct Answer: B**

## Types of Computers

### *Digital Computer*

**Q913. A GPU (Graphics Processing Unit) in a digital computer is optimized for:**

A) Only text processing
B) Parallel processing of graphics and compute-intensive tasks
C) Only network routing
D) Only audio processing

**Correct Answer: B**

## Programming Translators

### *Differences Among All Three*

**Q914. WebAssembly (Wasm) is a binary instruction format that allows code to run in browsers at:**

A) Very slow speed
B) Near-native speed, compiled from languages like C, C++, or Rust
C) No speed at all
D) Only with JavaScript

**Correct Answer: B**

## Cloud Computing

### *Definition of Cloud Computing*

**Q915. Cloud computing enables horizontal scaling, which means:**

A) Upgrading a single server's hardware
B) Adding more server instances to handle increased load
C) Reducing the number of servers
D) Turning off servers permanently

**Correct Answer: B**

**Q916. Vertical scaling in cloud computing means:**

A) Adding more machines
B) Increasing the resources (CPU, RAM) of an existing machine
C) Removing all resources
D) Only using storage

**Correct Answer: B**

### *Cloud Storage Concept*

**Q917. Block storage in the cloud is ideal for:**

A) Hosting static websites
B) Databases and applications requiring consistent I/O performance
C) Only photo sharing
D) Only email

**Correct Answer: B**

### *Examples of Cloud Usage*

**Q918. Using Google Colab for machine learning experiments is an example of:**

A) On-premise computing only
B) Cloud-based PaaS/SaaS for computation
C) No computing at all
D) Physical notebook usage

**Correct Answer: B**

### *Pay-per-use Model*

**Q919. Spot instances in AWS offer discounted pricing because:**

A) They are permanent
B) They use spare capacity and can be interrupted by AWS
C) They have no computing power
D) They are more expensive than on-demand

**Correct Answer: B**

### *Remote Access Concept*

**Q920. A bastion host in cloud computing is used to:**

A) Store all company data publicly
B) Provide a secure entry point for SSH access to private cloud resources
C) Block all remote access
D) Only host websites

**Correct Answer: B**

## Cloud Service Providers

### *Amazon Web Services (AWS)*

**Q921. AWS IAM (Identity and Access Management) controls:**

A) Physical building access
B) Who can access which AWS resources and what actions they can perform
C) Only employee attendance
D) Only email permissions

**Correct Answer: B**

**Q922. Amazon SQS (Simple Queue Service) provides:**

A) Physical mail queues
B) Fully managed message queuing for decoupling microservices
C) Only printer queues
D) Only gaming leaderboards

**Correct Answer: B**

### *Microsoft Azure*

**Q923. Azure DevOps provides:**

A) Only design tools
B) CI/CD pipelines, version control, agile planning, and testing tools
C) Only hardware specifications
D) Only accounting software

**Correct Answer: B**

**Q924. Azure Active Directory (Azure AD) is used for:**

A) Only file storage
B) Identity management and single sign-on for cloud applications
C) Only video streaming
D) Only hardware diagnostics

**Correct Answer: B**

### *Difference: AWS vs Azure*

**Q925. IBM Cloud differentiates itself with strong offerings in:**

A) Only consumer products
B) Enterprise AI (Watson), hybrid cloud, and mainframe integration
C) Only gaming
D) Only social media

**Correct Answer: B**

## Cloud Service Models

### *SaaS - Definition*

**Q926. Multi-tenancy in SaaS means that:**

A) Each customer has their own server
B) Multiple customers share the same application instance with isolated data
C) Only one customer exists
D) No data is shared or stored

**Correct Answer: B**

### *PaaS - Definition*

**Q927. PaaS provides built-in tools for:**

A) Only hardware setup
B) Application development, testing, deployment, and scaling
C) Only physical security
D) Only network cabling

**Correct Answer: B**

### *IaaS - Definition*

**Q928. Auto-scaling in IaaS automatically adjusts:**

A) Employee numbers
B) The number of virtual machines based on current demand
C) Only the font size
D) Only the screen brightness

**Correct Answer: B**

## Cloud Deployment Models

### *Private Cloud*

**Q929. OpenStack is an open-source platform for building:**

A) Social media applications
B) Private and public cloud infrastructure
C) Only mobile games
D) Only email clients

**Correct Answer: B**

### *Use-case Based Differences*

**Q930. A startup with unpredictable traffic typically chooses public cloud because of:**

A) Higher long-term costs always
B) Elastic scaling and no upfront capital expenditure
C) No available options
D) Regulatory requirements

**Correct Answer: B**

## Virtualization & Architecture

### *Virtualization Definition*

**Q931. Network Function Virtualization (NFV) replaces physical network appliances with:**

A) More physical appliances
B) Software-based virtual network functions running on standard hardware
C) No networking at all
D) Only wireless signals

**Correct Answer: B**

### *Hypervisor Definition*

**Q932. Container runtime (e.g., containerd) differs from hypervisors by not needing:**

A) A host operating system
B) A separate guest operating system for each workload
C) Any software
D) Any hardware

**Correct Answer: B**

### *Role of Hypervisor in IaaS*

**Q933. Multi-tenancy in IaaS relies on hypervisors to ensure:**

A) All customers share data freely
B) Strong isolation between different customers' virtual machines
C) No security at all
D) Only one customer per datacenter

**Correct Answer: B**

## Utility & Grid Computing

### *Grid Computing Definition*

**Q934. Volunteer computing platforms like BOINC enable:**

A) Only professional researchers to contribute
B) Anyone with a computer to donate idle processing power to scientific projects
C) Only government agencies to participate
D) Only companies to contribute

**Correct Answer: B**

### *Pay-per-use Concept*

**Q935. Savings plans in cloud computing offer flexibility by:**

A) Requiring no commitment
B) Applying discounts to any compute usage matching a committed spend level
C) Only applying to storage
D) Increasing costs for all services

**Correct Answer: B**

### *Difference: Grid vs Cloud*

**Q936. Service Level Agreements (SLAs) are more common in cloud computing than grid computing because:**

A) Grid computing has strict SLAs
B) Cloud providers are commercial entities with contractual obligations
C) Cloud has no standards
D) Grid computing doesn't exist anymore

**Correct Answer: B**

## SOA & Managed Services

### *Service-Oriented Architecture (SOA)*

**Q937. RESTful APIs in modern SOA use HTTP methods like GET, POST, PUT, DELETE to:**

A) Only browse websites
B) Perform CRUD operations on resources
C) Only send emails
D) Only print documents

**Correct Answer: B**

### *Client-Server Model*

**Q938. Load balancing distributes incoming client requests across multiple servers to:**

A) Slow down responses
B) Prevent any single server from being overwhelmed
C) Increase latency
D) Delete all requests

**Correct Answer: B**

## Client & GUI

### *Client Definition*

**Q939. A Progressive Web App (PWA) is a client application that:**

A) Only works offline
B) Runs in a browser but can be installed and work offline like a native app
C) Only works on servers
D) Requires no internet ever

**Correct Answer: B**

### *GUI Definition*

**Q940. The WIMP paradigm in GUI stands for:**

A) Wireless Internet for Mobile Phones
B) Windows, Icons, Menus, and Pointer
C) Web Integrated Messaging Platform
D) Wireless Input Management Protocol

**Correct Answer: B**

### *Application Layer Role*

**Q941. SSH (Secure Shell) at the application layer enables:**

A) Unencrypted file transfer only
B) Secure remote command-line access to servers
C) Only web browsing
D) Only video calling

**Correct Answer: B**

### *Client-Server Interaction*

**Q942. Server-Sent Events (SSE) allow a server to:**

A) Only receive data from clients
B) Push real-time updates to clients over a single HTTP connection
C) Block all client connections
D) Only serve static files

**Correct Answer: B**

## Memory

### *Primary Memory (RAM)*

**Q943. DDR5 RAM offers higher bandwidth than DDR4 primarily through:**

A) Slower clock speeds
B) Higher data rates and improved channel architecture
C) Reducing memory capacity
D) Using older technology

**Correct Answer: B**

### *Secondary Memory*

**Q944. A hybrid drive (SSHD) combines:**

A) Only SSD technology
B) A traditional HDD with a small SSD cache for faster access
C) Only magnetic tape
D) Only floppy disk technology

**Correct Answer: B**

### *Magnetic Tape*

**Q945. Iron oxide and chromium dioxide are common materials used in:**

A) SSD manufacturing
B) Magnetic tape coating for data storage
C) RAM production
D) LCD screens

**Correct Answer: B**

### *Hard Disk*

**Q946. Defragmentation reorganizes hard disk data so that:**

A) Files become larger
B) Fragments of files are stored contiguously for faster sequential reads
C) Files are deleted permanently
D) The disk spins slower

**Correct Answer: B**

### *Floppy Disk*

**Q947. The standard 3.5-inch floppy disk has a rigid plastic case unlike earlier floppies that used:**

A) Metal enclosures
B) Flexible thin plastic sleeves
C) Glass cases
D) Wooden frames

**Correct Answer: B**

### *RAM vs Secondary Memory*

**Q948. Virtual memory uses secondary storage to extend available RAM by:**

A) Replacing RAM entirely
B) Swapping inactive memory pages between RAM and disk
C) Deleting all RAM contents
D) Only using flash drives

**Correct Answer: B**

## Input/Output Devices

### *Laser Printer*

**Q949. The transfer roller in a laser printer applies charge to move toner from the drum to:**

A) Back into the cartridge
B) The paper surface
C) The fuser unit directly
D) The air

**Correct Answer: B**

### *Printer Speed (PPM)*

**Q950. A printer rated at 40 PPM simplex may print at approximately 20 PPM in duplex because:**

A) It runs faster in duplex
B) Each page must be flipped and printed on the reverse side
C) Duplex uses more ink
D) Duplex only prints headers

**Correct Answer: B**

### *DPI vs PPM*

**Q951. Photo printers prioritize high DPI over high PPM because:**

A) Speed matters more than quality for photos
B) Image detail and color accuracy are more important than print speed
C) Photos are always small
D) Photos don't need dots

**Correct Answer: B**

## Keyboard & Hardware

### *ESC Key*

**Q952. In Linux terminal, pressing ESC then a letter can trigger:**

A) Shutdown
B) Meta key commands in programs like Emacs
C) File deletion
D) Printer activation

**Correct Answer: B**

### *Enter Key*

**Q953. In terminal/command line interfaces, Enter submits the typed command for:**

A) Deletion
B) Execution by the shell
C) Printing
D) Saving to disk only

**Correct Answer: B**

### *Delete Key*

**Q954. Ctrl + Delete in most text editors deletes:**

A) The entire document
B) The word to the right of the cursor
C) The entire line
D) Nothing at all

**Correct Answer: B**

### *Insert Key*

**Q955. Modern laptops often omit the Insert key because:**

A) It was never useful
B) Overtype mode is rarely used and the key saves keyboard space
C) It was too expensive
D) It caused hardware failures

**Correct Answer: B**

## Computer Hardware Basics

### *Semiconductor Definition*

**Q956. Photovoltaic solar cells convert sunlight to electricity using:**

A) Only metals
B) Semiconductor materials like silicon
C) Only plastics
D) Only wood

**Correct Answer: B**

### *Chip Manufacturing Concept*

**Q957. Moore's Law observes that transistor density on chips roughly doubles every:**

A) One month
B) About two years
C) Ten years
D) One hundred years

**Correct Answer: B**

**Q958. ASML is a key company in chip manufacturing because it produces:**

A) Only software
B) Advanced EUV lithography machines essential for cutting-edge chips
C) Only packaging materials
D) Only cooling systems

**Correct Answer: B**

## Types of Computers

### *Analog Computer*

**Q959. Theremin, an electronic musical instrument, uses analog computing principles to:**

A) Display digital numbers
B) Generate sound based on the player's hand position in electromagnetic fields
C) Only record digital audio
D) Only display text

**Correct Answer: B**

### *Digital Computer*

**Q960. ENIAC, completed in 1945, is considered one of the first general-purpose:**

A) Analog computers
B) Electronic digital computers
C) Quantum computers
D) No computer at all

**Correct Answer: B**

### *Hybrid Computer Use-cases*

**Q961. Modern robots use hybrid computing: analog sensors feed data to digital processors for:**

A) No purpose
B) Real-time decision making and precise motor control
C) Only visual display
D) Only sound production

**Correct Answer: B**

## Storage & Processing

### *Sequential Access Devices*

**Q962. A singly linked list in programming is a sequential access data structure because:**

A) Any element can be accessed directly
B) You must traverse from the head node through each subsequent node
C) It has no elements
D) It uses random access memory only

**Correct Answer: B**

### *Magnetic Tape Usage*

**Q963. Data migration from old tape formats to new ones is necessary because:**

A) Old tapes never degrade
B) Tape drives for older formats may become unavailable and tapes degrade over time
C) New tapes don't store data
D) Migration is never required

**Correct Answer: B**

## Programming Translators

### *Assembler*

**Q964. ARM assembly language is used in:**

A) Only old mainframes
B) Mobile devices, embedded systems, and modern Macs with ARM-based chips
C) Only desktop printers
D) Only calculators

**Correct Answer: B**

### *Compiler*

**Q965. Cross-compilation is the process of compiling code on one platform to run on:**

A) The same platform only
B) A different target platform (e.g., compiling on x86 for ARM)
C) No platform at all
D) Only virtual platforms

**Correct Answer: B**

### *Interpreter*

**Q966. REPL (Read-Eval-Print Loop) is an interactive environment provided by interpreters that:**

A) Only reads files
B) Reads input, evaluates it, prints the result, and loops for more input
C) Only prints documents
D) Only loops indefinitely without output

**Correct Answer: B**

### *Differences Among All Three*

**Q967. Garbage collection is a memory management feature common in interpreted and some compiled languages that:**

A) Collects physical garbage
B) Automatically frees memory that is no longer in use
C) Increases memory leaks
D) Only works in assembly language

**Correct Answer: B**

## Cloud Computing

### *Advantages of Cloud Computing*

**Q968. Disaster recovery in the cloud is faster than traditional methods because:**

A) Cloud has no backup systems
B) Data is replicated across multiple geographic regions automatically
C) Recovery requires physical tape transport only
D) Disasters never affect cloud systems

**Correct Answer: B**

### *Examples of Cloud Usage*

**Q969. Training a deep learning model on Google Cloud TPUs is an example of:**

A) Cloud-based high-performance computing
B) Local laptop computing
C) Manual calculation
D) Paper-based research

**Correct Answer: A**

## Cloud Service Models

### *SaaS Examples*

**Q970. HubSpot CRM accessed via a web browser is classified as:**

A) IaaS
B) PaaS
C) SaaS
D) FaaS

**Correct Answer: C**

### *PaaS Examples*

**Q971. Firebase by Google provides backend services and is an example of:**

A) IaaS only
B) PaaS/BaaS
C) SaaS only
D) Hardware

**Correct Answer: B**

## Virtualization & Architecture

### *Single Physical Resource Sharing*

**Q972. CPU pinning assigns specific physical CPU cores to a VM to ensure:**

A) Random performance
B) Consistent performance by avoiding shared CPU contention
C) No processing at all
D) Only single-core usage

**Correct Answer: B**

### *Virtual Machine Isolation*

**Q973. A hypervisor crash could potentially affect all VMs on that host, which is why cloud providers use:**

A) Only one VM per datacenter
B) Redundancy across multiple physical hosts and availability zones
C) No backup systems
D) Only one datacenter globally

**Correct Answer: B**

## Utility & Grid Computing

### *Utility Computing Definition*

**Q974. Serverless computing exemplifies utility computing's vision because users pay:**

A) A flat monthly fee regardless of usage
B) Only for the exact compute time consumed per function invocation
C) Nothing at all
D) For the entire server 24/7

**Correct Answer: B**

### *Heterogeneous Resources*

**Q975. Grid computing middleware translates job requirements so that tasks run correctly on:**

A) Only identical machines
B) Different operating systems, architectures, and hardware configurations
C) Only mobile phones
D) Only one specific computer

**Correct Answer: B**

## SOA & Managed Services

### *Managed IT Services*

**Q976. Managed Detection and Response (MDR) services provide:**

A) Only hardware warranties
B) 24/7 threat monitoring, detection, and response by security experts
C) Only office supplies
D) Only parking management

**Correct Answer: B**

## Client & GUI

### *Application Layer Role*

**Q977. SNMP (Simple Network Management Protocol) at the application layer is used for:**

A) Only sending emails
B) Monitoring and managing network devices like routers and switches
C) Only web browsing
D) Only gaming

**Correct Answer: B**

## Memory

### *Hard Disk*

**Q978. S.M.A.R.T. technology in hard disks provides:**

A) Only a brand name
B) Self-Monitoring, Analysis, and Reporting to predict disk failures
C) Only encryption
D) Only formatting tools

**Correct Answer: B**

### *Floppy Disk*

**Q979. The term 'floppy' originated because early 8-inch disks:**

A) Were very rigid
B) Were housed in flexible plastic sleeves and could physically bend
C) Were made of metal
D) Could float in water

**Correct Answer: B**

## Input/Output Devices

### *Laser Printer*

**Q980. Color laser printers use four toner cartridges: Cyan, Magenta, Yellow, and:**

A) Red
B) Black (CMYK color model)
C) Green
D) White

**Correct Answer: B**

## Keyboard & Hardware

### *ESC Key*

**Q981. On some keyboards, the ESC key has a physical indentation or gap to help users find it:**

A) By color only
B) By touch without looking (tactile identification)
C) By sound
D) By weight

**Correct Answer: B**

## Types of Computers

### *Analog Computer*

**Q982. An aneroid barometer is an analog device that measures atmospheric pressure using:**

A) Digital sensors
B) A flexible metal capsule that contracts and expands with pressure changes
C) Laser beams
D) Radio waves

**Correct Answer: B**

### *Hybrid Computer*

**Q983. An electrocardiogram (ECG) machine is hybrid because it captures analog heart signals and:**

A) Only stores them on paper
B) Converts them digitally for display, analysis, and storage
C) Only transmits them by radio
D) Only plays them as sound

**Correct Answer: B**

## Storage & Processing

### *Sequential Access Devices*

**Q984. Audio cassette tapes used for music are sequential access because you must:**

A) Press one button to jump anywhere
B) Fast-forward or rewind through the tape to find a specific song
C) Type a track number to skip
D) Click on a song from a playlist

**Correct Answer: B**

## Programming Translators

### *Assembler*

**Q985. Assembly language programs are specific to a processor architecture, meaning x86 assembly:**

A) Runs on all processors
B) Won't run on ARM processors without rewriting
C) Is identical to ARM assembly
D) Works on printers too

**Correct Answer: B**

### *Compiler*

**Q986. Profile-guided optimization (PGO) uses runtime profiling data to help the compiler:**

A) Slow down the code
B) Generate more optimized code based on actual usage patterns
C) Delete the source code
D) Only format the code

**Correct Answer: B**

### *Interpreter*

**Q987. Monkey-patching in interpreted languages allows modification of classes and methods:**

A) Only before writing any code
B) At runtime without changing the original source code
C) Only by the compiler
D) Never at any time

**Correct Answer: B**

## Cloud Computing

### *Cloud Storage Concept*

**Q988. Data deduplication in cloud storage reduces cost by:**

A) Duplicating all data
B) Eliminating redundant copies of data to save storage space
C) Deleting all user data
D) Only compressing images

**Correct Answer: B**

## Cloud Service Providers

### *Amazon Web Services (AWS)*

**Q989. AWS Regions consist of multiple Availability Zones to ensure:**

A) Data is stored in one place only
B) High availability and fault tolerance
C) Slower network speeds
D) No redundancy at all

**Correct Answer: B**

## Cloud Deployment Models

### *Public Cloud*

**Q990. A startup choosing public cloud avoids:**

A) All technology entirely
B) Large upfront capital expenditure on hardware
C) Any form of computing
D) All software usage

**Correct Answer: B**

## Virtualization & Architecture

### *Hypervisor Definition*

**Q991. QEMU is an open-source machine emulator that can also work with KVM as a:**

A) Web browser
B) Hypervisor accelerator to run VMs at near-native speed
C) Word processor
D) Music player

**Correct Answer: B**

## Memory

### *Primary Memory (RAM)*

**Q992. Registered (buffered) RAM uses a buffer between the memory module and the memory controller to:**

A) Slow down operations
B) Improve stability in systems with large amounts of RAM
C) Reduce total capacity
D) Only for gaming use

**Correct Answer: B**

### *Secondary Memory*

**Q993. Wear leveling in SSDs distributes write operations evenly to:**

A) Increase write speed only
B) Extend the lifespan of the drive by preventing any one cell from wearing out prematurely
C) Reduce storage capacity
D) Only benefit HDD drives

**Correct Answer: B**

## Input/Output Devices

### *Printer Speed (PPM)*

**Q994. First Page Out Time (FPOT) measures how quickly a laser printer produces:**

A) The last page of a long job
B) The very first printed page after receiving a print command
C) Only blank pages
D) Only test pages

**Correct Answer: B**

## Computer Hardware Basics

### *Semiconductor Definition*

**Q995. LEDs (Light Emitting Diodes) are semiconductor devices that emit light when:**

A) No current flows
B) Electric current passes through them in the forward direction
C) They are submerged in water
D) They are exposed to extreme cold only

**Correct Answer: B**

## Types of Computers

### *Digital Computer*

**Q996. A workstation is a high-performance digital computer designed for:**

A) Basic web browsing only
B) Technical or scientific applications like CAD, 3D rendering, and data analysis
C) Only text editing
D) Only video playback

**Correct Answer: B**

## Storage & Processing

### *Sequential Access Devices*

**Q997. VHS video tapes are sequential access media because to watch a specific scene you must:**

A) Click a scene menu
B) Fast-forward or rewind through the tape linearly
C) Type a timestamp
D) Select it from a digital menu

**Correct Answer: B**

## Programming Translators

### *Differences Among All Three*

**Q998. Source maps allow debugging of compiled or transpiled code by mapping back to:**

A) Machine code
B) The original source code for readable debugging
C) Binary format only
D) Object code only

**Correct Answer: B**

## Cloud Computing

### *Advantages of Cloud Computing*

**Q999. Geographic redundancy in cloud computing means data is stored in:**

A) Only one data center
B) Multiple data centers across different geographic locations for disaster protection
C) No location at all
D) Only the user's local machine

**Correct Answer: B**

## Utility & Grid Computing

### *Geographically Dispersed Systems*

**Q1000. Latency in geographically dispersed grid systems is managed by:**

A) Ignoring it completely
B) Strategic task placement and data locality optimization
C) Only using faster light
D) Removing all network connections

**Correct Answer: B**