Q1: DynamoDB: Eventually Consistent Reads (definition)
A1: 1) Consistently across all copies of data is usually reached within a second
2) Repeating a read after as shoot time should return the updated data (best read performance)

Q2: S3-IA (definition)
A2: 1) For data that is accessed less frequently
2) But requires rapid access when needed
3) Lower fee than S3 tier, but you are charged a retrieval fee

Q3: Lambda (use case)
A3: 1) As an event-driven compute service where AWS Lambda runs your code in response to events
2) There could be:
-Changes to data in a S3 bucket OR a DynamoDB table
-As a compute service to run code in response to HTTP request

Q4: EC2 Placement Groups (definition)
A4: 1) A placement group is a logical grouping of instances within a single availability zone
2) Using placement groups enables applications to participate in a low latency, 10 Gbps network
3) Placement Groups are recommended for applications that benefit from low network latency, high network throughput, or both

Q5: Route53 weighted Routing (definition)
A5: 1) Used to distribute traffic between instances, ELB, or on-premise data
2) Great for load testing or when migrating applications

Q6: S3 Bucket Policies Elements: Principal
A6: 1) The AWS account or IAM user that the policy applies to.

Q7: Audits/Shared Model (managed by the customer)
A7: 1) Customer Data
2) Users & Roles
3) Account Management
4) Applications
5) Firewalls
6) Network configuration
7) Guest Operating Systems

Q8: IAM Root Account (definition)
A8: 1) The initial signup email address
2) AWS account has Admin Access

Q9: S3 Buckets
A9: 1) Files/Objects are stored in "buckets"
2) Name Must be unique globally

Q10: AWS Lambda (definition)
A10: 1) Lambda is a compute service where you can upload your code and create a Lambda function
2) AWS Lambda takes core of provisioning and managing the servers that you are use to run the code
3) You don't have worry about O.S. patching/scaling

Q11: VPC: Benefits
A11: 1) Launch instances into a subnet of your choosing
2) Assign custom IP address range in each subnet
3) Configure route tables between subnets
4) Create internet gateways and attach them to subnets (or not)
5) Much better security control over your AWS resources
-Instance security groups
-Subnet network access control list (ACLs)

Q12: EC2 Reserved Instances (when to use)
A12: 1) Applications have steady state or predictable usage
2) Applications that require reserved capacity
3) Users able to make upfront payments to reduce their total computing cost even further
*NOTE: When you know what you will need for the next 12+ months

Q13: Route53 Latency based Routing (definition)
A13: 1) Used to send traffic (users) to the "closest" region based off of latency
2) Acts like a "load balancer" between regions

Q14: VPC Peering
A14: 1) Allows you to connect on VPC with another via a direct network route using private IP Address
2) Instances behave as if they were on the same network
3) You can peer VPCs with other AWS accounts as well as with other VPCs in the same account
4) Peering is in a star configuration, i.e. one central VPC peers with four other

Q15: EC2 Instance Payment Options (list)
A15: 1) On-demand
2) Reserved
3) Spot

Q16: EC2: RAID 5 (definition)
A16: 1) Good for reads
2) Bad for writes
3) AWS does NOT recommend EVER putting RAID 5's on EBS volumes

Q17: VPC (use case)
A17: 1) You can easily customize the network config for you VPC
2) For example, you can create a public-facing subnet for your web servers that has access to the internet, and place your backend system such as database or application servers in a private-facing subnet with NO internet access
3) You can leverage multiple layers of security, including security groups, and network access control list, to help control access to EC2 instance in each subnet

Q18: EC2: T2 (speciality & use case)
A18: 1) Speciality: Low cost, general purpose
2) Use case: Web server/small databases

Q19: VPC ACL (abbrev & definition)
A19: ACL = Access Control List
1) Act's almost like a firewall
2) Allows you to put down networks rules across entire subnets (rather than doing it through security groups)
3) Overrules Roles in security groups
4) Numbered list of rules that are evaluated in order, starting with the lowest # rule first

Q20: S3 Bucket Policies Element: Resources
A20: 1) A bucket or an object is a resource that you are creating allow/deny permissions for
*NOTE: An explicit DENY always overrides an explicit ALLOW

Q21: S3 (abbrev)
A21: Simple Storage Service

Q22: EC2: AMI Template (definition)
A22: 1) A template for the root volume for the instance
2) For example, an operating system , an application server, and applications

Q23: Security Groups
A23:1) Operates on the instance layer
2) Supports "allow" rules only
3) Is "stateful", so return traffic request are allowed regardless of rules
4) Evaluates ALL rules before deciding to allow traffic

Q24: Snapshots (definition)
A24: 1) Exist on S3
2) You can take a snapshot of a volume, this will store that volume on S3
3) Point-in-time copies of volumes
4) Snapshots are incremental, this means they store the blocks that have changed since you last snapshot
5) First snapshot may take some time to create, since it is copying the entire volume (not just the changes)

Q25: EC2 CloudWatch (definition)
A25: 1) Monitor resources and applications
2) Collect and track metrics
3) Collect and monitor log files
4) Set alarms
5) Automatically react to changes in AWS resources

Q26: IAM Policies (definition)
A26: A document that defines one (or more) permissions

Q27: EC2 RAIDS (definition)
A27: 1) Essentially putting a whole bunch of disks together and they act as one disk to the operating system
2) Used when you are NOT getting the disk I/O's that you require
3) RAID 0 & 10 used most

Q28: Default vs. Custom VPC
A28: 1) Default VPC is user friendly, allowing you to immediately deploy instances
2) All subnets in a default VPC have an internet gateway attached
3) Each EC2 instance has both a public and a private IP address
4) If you delete the default VPC the only way to get it back is to contact AWS

Q29: VPC Restrictions (limits)
A29: 1) 5 Elastic IP addresses
2) 5 internet gateways
3) 5 VPCs per region (can be increased on request)
4) 50 VPN connections per region
5) 50 VPN Customer Gateways per region
6) 200 Customer Gateways per region
7) 100 Security Groups per VPC

Q30: Identity Store (who)
A30: 1) Facebook
2) Active-directory
3) Google
4) Amazon

Q31: Aurora Scaling
A31: 1) Start with 10GB, scales in 10GB increments to 64TB
2) Compute resources can scale up to 32vCPUs and 244GB of memory

Q32: IAM (abbrev)
A32: Identity Access Management

Q34: RedShift (definition)
A34: 1) A fast powerful, fully managed petabyte-scale data warehouse service in the cloud
2) Customers can start small for just $0.25 per hour with NO commitments or upfront cost and scale to a petabyte or more for $1000 per terabyte per year. Which is less than a tenth of most other data warehouse solutions

Q35: Centralized Logging (3rd party)
A35: 1) Rsylog (native to linux)
2) Splunk
3) Kiwi
-made available to S3 for "download" via cronjobs
*NOTE: Enable access logging on S3
*NOTE: Enable CloudWatch logs

Q36: EC2: C4/C3 (speciality & use case)
A36: 1) Speciality: Compute optimized
2) Use case: CPU intensive apps/DBs

Q37: IAM Secret Key (definition)
A37: Secret Access Key = password
*NOTE: API access only, not for console login
*NOTE: You can only view/download once (when generated)

Q38: EC2 On-Demand (definition)
A38: 1) Allows you to pay a fixed rate, by the hour, with no commitment
*NOTE: Expecting a "black" Friday sale and may need 4 extra servers for 1 day

Q39: Network ACL
A39: 1) Operates on the subnet/network level
2) Supports ALLOW & DENY rules
3) Stateless, so return traffic must be allowed through an outbound rule
4) Process rules in NUMBER ORDER (lower #'s overrule higher #'s)

Q40: EBS Volumes (definition)
A40: 1) Allow you to create storage volumes and attach them to EC2 instances
2) Once attached, you can create a file system on top of these volumes, run a database, or use them in any other way you would use a block device
3) EBS volumes are placed in a specific availability zone, where they are automatically replaced to protect from the failure of a single component

Q41: EC2: D2 (speciality & use case)
A41: 1) Speciality: Dense storage
2) Use case: File servers, data warehousing, Hadoop

Q42: IAM (benefits/list)
A42: 1) Centralized control of your AWS account
2) Shared access to your AWS account
3) Granular permissions
4) Identity federation (Active Dir, facebook, etc)
5) Multifactor Identification (MFA)
6) Provide temporary access for users/devices/service
7) Setup password rotation policy
8) Integrates with many different AWS services
9) Supports PCI DSS Compliance

Q43: OLAP (abbrev)
A43: Online Analytic Processing

Q44: EC2: Selecting an AMI (based on)
A44: 1) Region
2) Operating system
3) Architecture (32-bit/64-bit)
4) Launch Permissions
5) Storage of the root
-Referred to as "root" device volume
-Instance store (ephemeral storage)
-EBS backed volumes

Q45: S3 Object Component (list)
A45: 1) Key
2) Value
3) Version ID
4) Metadata
5) Sub resources
6) Access controllers

Q46: Identity Broker
A46: A service that allows you to take an identity from point "A" and federate it to another identity at point "B"

Q47: EBS (abbrev)
A47: EBS = Elastic Block Store

Q48: OLTP (abbrev)
A48: Online Transactional Processing

Q49: S3 Version ID (definition)
A49: How different versions of file are labeled in an S3 bucket when versioning is enabled.

Q50: S3 Pricing (based on)
A50: 1) Storage Type
2) Request
3) Amount of data transferred

Q51: Audits/Shared Model (managed by AWS)
A51: 1) Virtualization layer
2) Compute infrastructure
3) Storage infrastructure
4) Network infrastructure
5) Facilities physical security
6) AWS global infrastructure

Q52: EC2 Spot Instances (definition)
A52: 1) Enables you to big whatever price you want for instance capacity, providing for even greater savings if your applications have flexible start and end times
*NOTE: Pricing depends on market conditions. Your instance can be pulled if the "ask" price goes above your "bid" price

Q53: S3 Key (definition)
A53: The name of the object

Q54: S3 Standard Storage (definition)
A54: Availability = 99.99% **&** Durability = 99.999999999% (11 nines)
1) Stored redundancy across multiple devices in multiple facilities and is designed to sustain the loss of TWO facilities concurrently

Q55: Aurora (definition)
A55: 1) Is a MySQL-compatible, relational database engine that combines the speed and availability of high-end commercial databases with the simplicity cost-effectiveness of open source databases
2) Provides up to five (5) times better performance than MySQL at 1/10th the price

Q56: EC2: RAID 0 (definition)
A56: 1) Stripped
2) No redundancy
3) Good performance

Q57: EC2: RAID 1 (definition)
A57: 1) Mirrored
2) Redundancy

Q58: S3 Storage Tiers (list)
A58: 1) S3
2) S3-IA (infrequent access)
3) RRS (reduced redundancy storage)
4) Glacier

Q59: EC2: AMI's (list)
A59: 1) Template
2) Launch Permissions
3) Block device mapping

Q60: EC2 EFS (definition)
A60: 1) A file storage service for Amazon Elastic Compute Cloud (EC2) instances
2) Amazon EFS is easy to use and provides simple interfaces that allows you to create and configure file systems quickly and easily
3) With EFS, storage capacity is elastic, growing/shrinking as you add/remove files. So your apps have the storage they need and when they need it

Q61: S3 Bucket Policies Elements: Actions
A61: 1) Identity resources operations that you allow or deny
*NOTE: i.e. list objects/upload objects

Q62: S3 File Size
A62: 1) Files can be 0 byte to 5 TB in size
2) Unlimited storage (for each account)

Q63: EC2 Instance Types (list)
A63: 1) T2
2) M4
3) M3
4) C4
5) C3
6) R3

7) G2
8) I2
9) D2

Q64: S3 Availability & Durability
A64: 1) Availability = 99.99%
2) Durability = 99.999999999% (11 nines)

Q65: EC2 Spot Pricing Instances (when to use)
A65: 1) Applications that have flexible start and end times
2) Applications that are only feasible at very low compute prices
3) Users with urgent computing needs for large amounts of additional capacity
4) ONLY use IF you can have downtime

Q66: DynamoDB Configuration: Benifits
A66: 1) Stored on SSD storage (no magnetic storage)
2) Spread across 3 geographical distinct data centers
-Eventually Consistent reads (default) OR
-Strongly Consistent Reads

Q67: SNS (abbrev)
A67: Simple Notification Service

Q68: EC2: AMI (abbrev & definition)
A68: AMI = Amazon Machine Image
1) A pre-baked virtual machine
2) Comes with different operating systems

Q69: SWF (definition)
A69: 1) A web service that makes it easy to coordinate work across distributed application components
2) Enables application for a range of use cases, including media processing, web applications backends, business process workflows, and analytics pipelines, to be designed as a coordination of tasks
3) Tasks represent invocations of various processing steps in an application which can be performed by executable code, web service calls, human actions, and scripts

Q70: DNS (abbrev & definition)
A70: DNS = Domain name system
1) Route and users to interact applications by translating names like www.example.com into numeric IP m addresses like 192.0.2.1 that computers use to connect to each other
2) Think of DNS like a phone book

Q71: S3 Bucket Policies Elements: Effect
A71: 1) Defines if the policy is allowing/denying the above action

Q72: Route53 (definition)
A72:1) A highly available and scalable cloud Domain Name System (DNS) web service
2) Names after port 53, which is the DNS Port

Q73: IAM Groups (definition)
A73: A collection of users

Q74: EC2 Bash Scripts (definition)
A74: 1) Use bash scripts to start moving code around from the S3 buckets to EC2 instances
2) Turn on apache/move code/files to EC2
3) For automation

Q75: Types of Databases (list)
A75: 1) Relational (OLTP)
-MySQL
-SQL
-Postgres
-Oracle
-Aurora

2) Non-relational Database (NoSQL)
-DynamoDB

3) Data warehouse databases (OLAP)
-RedShift

Q76: EC2: IOPS (abbrev & definition)
A76: IOPS = Input/Output per second
1) How fast the disk is from a read/write capacity
2) The more IOPS you have, the faster you can read/write to a disk (EBS)

Q77: EC2: R3 (speciality & use case)
A77: 1) Speciality: Memory optimized
2) Use case: Memory intensive apps/DBs

Q78: Elastic Load Balancers
A78: 1) Can be in or our of service
2) Automatically distributes incoming application traffic across multiple EC2 instances
3) Perform health checks
4) Have their own DNS name. You are never given an IP address.

Q79: EC2: Volumes
A79: 1) Exist on EBS
2) Basically a virtual hard disk

Q80: EC2 (definition)
A80: 1) A web based service that provides resizable compute capacity in the cloud
2) Reduces the time required to obtain and boot new server instances to minutes, allowing you to quickly scale capacity, both UP and DOWN, as your computing requirements change

Q81: EC2: RAID (abbrev)
A81: RAID = Redundant Array of Independent Disks

Q82: EC2: AMI (definition)
A82: 1) AMI provides the information required to launch a virtual sever in the cloud
2) You specify and AMI when you launch an instance
3) You can launch as many instances from AMI that you need
4) You can also launch instances from as many different AMI's as you need

Q83: DynamoDB (definition)
A83: 1) Fast and flexible NoSQL database service for all applications that need consistent, single-digit millisecond latency at any scale
2) It is a fully managed database and supports both documented and key-value data models
3) It's flexible data model and reliable performance make it a great fit for mobile web, gaming, ad-tech, IoT, and many other applications

Q84: S3 RRS (definition)
A84: Availability: 99.99%
Durability: 99.99%
1) Storage for objects that CAN be lost (since they can be regenerated, i.e. pictures thumbnails)

Q85: EC2 EFS (abbrev)
A85: EFS = Elastic File System

Q86: IAM Roles (definition)
A86: You create and can assign them to AWS resources like an EC2 instance (which you can't do with IAM access polices).

Q87: EC2: M4/M3 (speciality & use case)
A87: 1) Speciality: General purpose
2) Use case: Application servers

Q88: EBS Volume Types (list)
A88: 1) General purpose SSD
2) Provisioned IOPS SSD
3) Magnetic (standard)

Q89: EC2 Reserved Instances (definition)
A89: 1) Provide you with capacity reservation
2) Offers a significant discount on the hourly charge for an instance (massive discount over on-demand)
3) 1-3 year terms
* NOTE: You will always have a minimum steady state

Q90: EC2 EFS Features (list)
A90: 1) Supports the Network File System (NFSv4)
2) You only pay for the storage you use ($0.30 per GB of storage)
3) Can scale up to petabytes
4) Can support thousands of concurrent NFS connections
5) Data is stored across multiple AZ's within a region
6) Block based storage, NOT object based

Q91: Route53 & DNS Failover
A91: 1) You can setup a "primary" and "failover" DNS
-"Cross-region failover"
-Send failover to S3, on-premise or other regions
2) Setup primary "A" record
3) Setup health check for that
4) Setup failover "A" record

Q92: EC2: RAID (list)
A92: 1) RAID 0
2) RAID 1
3) RAID 5
4) RAID 10

Q93: Federation
A93: 1) Grant temporary access to users on a corporate network without having to create IAM credentials for each user
2) Single sign-on would be allowing federated users to login to the AWS console without having IAM users defined
*NOTE: For mobile use: Use facebook/amazon/google to authenticate

Q94: Magnetic EBS Volumes (definition)
A94: 1) Lower Cost per gigabyte of all EBS volume types
2) Magnetic Volumes are ideal for workloads were data is accessed infrequently, and applications where the lowest storage cost is important

Q95: Identities
A95: 1) A user or "identity" within a service (facebook, etc)

Q96: EC2 Meta Data Link (URL)
A96: curl http://169.254.169.254/latest/meta-data

Q97: SWF (abbrev)
A97: Simple Workflow Service

Q98: S3 Meta Data (definition)
A98: 1) Data about the data you storing

Q99: EC2: AMI Launch Permissions (definition)
A99: 1) Launch permissions that control which AWS accounts can use the AMI to launch instances

Q100: Redshift Configuration
A100: 1) Single Node (160 GB)
2) Scale to Multi-Node
-Leader node (manages client connections and receives queries)
-Compute Note (store data and perform queries and computations, up to 128 compute nodes

Q101: EC2: I2 (speciality & use case)
A101: 1) Speciality: High speed storage
2) User case: NoSQL DBs, data warehousing

Q102: S3 Storage Type
A102: 1) Object based storage (files, docs, pictures)
2) NOT operating systems or databases

Q103: EC2: AMI Block Device Mapping (definition)
A103: 1) A block device mapping that specifies the volumes to attach to the instance when it's launched

Q104: Elasticache (use case)
A104: 1) Can be used to significantly improve latency and throughput for many read-heavy application workloads (such as social networking, gaming, media sharing, Q&A) OR compute intensive workloads (such as a recommendation engine)
2) Caching improves app performance by storing critical data in memory for lower latency access

Q105: SWF vs. SQS
A105: 1) SWF presents a "task-oriented API"
2) SQS offers a "message-oriented" API

Q106: IAM Access Key (definition)
A106: Access Key ID = User Name
*NOTE: API, not console login

Q107: BGP Routing (abbrev & definition)
A107: BGP = Border Gateway Protocol
1) Your network provider will pair up with your ASN and IP prefixes
2) Amazon then will advertise public IP prefixes for that region via BGP
3) Direct Connect customers in the U.S. will receive IP prefixes for all U.S. regions

Q108: Elasticache (definition)
A108: 1) Service that makes it easy to deploy, operate, and scale and in-memory cache in the cloud
2) Improves performance of web applications
3) Supports two open source in-memory caching engines (Memcached & Redis)

Q109: EC2: G2 (speciality & use case)
A109: 1) Speciality: Graphics/General purpose GPU
2) Use case: Video encoding, machine learning, 3D application streaming

Q110: SQS (abbrev)
A110: Simple Queue Service

Q111: EC2: RAID 10 (definition)
A111: 1) Striped & Mirrored
2) Good redundancy
3) Good performance
4) Combination of RAID 0 & 1

Q112: EBS Provisioned IOPS SSD (definition)
A112: 1) Designed for I/O intensive applications such as:
-Large relational or NoSQL DBs
-Use if you need more than 10,000 IOPS

Q113: IAM Users (definition)
A113: End users - think people

Q114: S3 Value (definition)
A114: 1) The data
2) Is made up of a sequence of bytes

Q115: EC2 (abbrev)
A115: EC2 = Elastic Compute Cloud

Q116: IAM (definition)
A116: 1) IAM allows you to manage users and their level of access to AWS console and resources

Q117: S3 (definition)
A117: 1) Provides developers and I.T. teams with secure, durable, highly-scalable object storage
2) Easy to use web interface to store and retrieve any amount of data from anywhere on the web
3) Is a simple Key-value store

Q118: EC2 On-Demand Instances (when to use)
A118: 1) Users that want low cost and flexibility of EC2 without any upfront payment or long-term commitment
2) Applications with short term, spiky, or unpredictable workloads that cannot be interrupted
3) Applications being developed or tested on EC2 for the first time
*NOTE: Use for short term projects/Temporary Dev environments

Q119: CIDR (abbrev & definition)
A119: CIDR = Classless Interdomain Routing
1) Basically, subnetting
2) Most common is 10.0.0.0/16

Q120: Aurora Availability
A120: 1) 2 copies of your data is contained in each availability zone, with a minimum of 3 availability zones
*NOTE: 6 copies of your data
2) Can handle loss of up to 2 copies without effecting WRITE availability
3) Can lose up to 3 copies without effecting READ availability

Q121: SNS (definition)
A121: 1) A web service that makes it easy to setup, operate, and send notifications from the cloud
2) It provides developers with a highly scalable, flexible, and cost-effective capability to publish messages from an application and immediately deliver them to subscribers or other applications

Q122: SQS (definition)
A122: 1) Is a web service that give you access to a message queue that can be used to store messages while waiting for a computer to process them
2) The queue acts as a buffer between the component and saving data, and the component receiving the data for processing

Q123: Security Token Service (STS)
A123: 1) Allows you to grant a trusted user temporary and limited access to AWS resources
*NOTE: Active-directory => temp user

Q124: EBS General Purpose SSD (definition)
A124: 1) Designed for 99.999% availability
2) Ratio of 3 IOPS per GB, with up to 10,000 IOPS and the ability to burst up to 3,000 IOPS for short periods for volumes under 1 GB