Knowledge Questions

a) What are microservices?

Microservice architecture is a method of developing software applications as a suite of independently deployable, small, modular services in which each service runs a unique process and communicates through a well-defined, lightweight mechanism (e.g. HTTP/REST with JSON) to serve a business goal.

How an environment which does one thing, can be considered a microservice?

If it's independently deployable, small, modular and runs a unique process.

b) How can you limit swap usage?

Swappiness is a Linux kernel parameter that controls the relative weight given to swapping out runtime memory. Open /etc/sysctl.conf as root add vm.swappiness = 10. Therefore when 10 % of the ram is left then it starts using swapiness.

c) Describe a scenario when deleting a file, but 'df' not showing the space being freed

If you delete a log file, for example on an Ubuntu server, and the file is still being open by some other process, df does not pick up the change until no processes are using the file.

d) How can you list all iptables rules?

sudo iptables -S

How can you delete a specific iptables rules?

sudo iptables -D followed by rule

e) Explain briefly the differences between InnoDB and MyISAM

MyISAM	Innodb
Not ACID-compliant and non-transactional	ACID-compliant and hence fully transactional with ROLLBACK and COMMIT and support for Foreign Keys
Requires full repair and rebuild of indexes and tables	Provides automatic recovery from crashes via the replay of logs
Changed database pages written to disk instantly	Dirty pages converted from random to sequential before commit and flush to disk
No ordering in storage of data	Row data stored in pages in PK order
Table-level locking	Row-level locking

f) What is the difference between a relational database like MySQL and a NoSQL database like Cassandra?

Cassandra is a Wide-column store, with a column-oriented database serializing all of the values of a column together. It can store data in records with very large numbers of dynamic columns. The column names as well as the record keys are not fixed. NoSQL does not require fixed table schemas, data can be inserted in a NoSQL database without first defining a rigid database schema. MySQL is a relational database management systems (RDBMS), support the relational data model. The schema of a table is fixed and defined by the table name and a fixed number of attributes with fixed data types. A record corresponds to a row in the table and consists of the values of each attribute.

g) What is a websocket?

A webSocket provides full-duplex communication (allows simultaneous bidirectional communication) channels over a single TCP connection. WebSocket solves several issues such as overhead of HTTP and Low Latency.

h) Describe how the HTTPS protocol works

HTTPS uses the HTTP protocol and layers a SSL/TLS encryption on top of it. Servers and clients speak through HTTP to each other, but over a secure SSL connection that encrypts and decrypts their requests and responses.

i) What is the difference between Containers and Vms?

Virtual machines run inside an isolated hardware virtualization environment provided by a hypervisor. Processes running in a virtual machine are hidden from the host operating system. From the point of view of an application in the VM, the virtual machine appears to be an autonomous physical computer separated from it's host. A container uses the process and file system isolation features of the Linux kernel to expose to the container to certain kernel features and its own isolated file system. From the point of view of an application running inside a container, the container appears to be a unique operating system instance. A contained application cannot see processes or any other resources outside of its container. Resources such as disk-space, memory can be easily shared among containers. The disk requirements of the container do not include an entire operating system, both the start-up time of the container and the required disk storage overhead are much smaller compared to the VM

j) What is a private cloud?

Private cloud is cloud infrastructure operated solely for a single organization.

What is the difference between a private cloud and an hybrid cloud?

Hybrid cloud is a composition of two or more clouds (private & public) that remain distinct entities but are bound together. Since a hybrid cloud consists public cloud, services are rendered over a network that is open for public use, this differs from a private cloud.

What tools do you know to setup a private cloud?

OpenStack, CloudStack, Eucalyptus

k) What is the difference between continuous delivery vs continuous deployment

Continuous delivery is a series of practices designed to ensure that code can be rapidly and safely deployed to production by delivering every change to a production-like environment and ensuring business applications and services function as expected through rigorous automated testing. Since every change is delivered to a staging environment using complete automation, you can have confidence the application can be deployed to production with a push of a button when the business is ready. Continuous deployment is the next step of continuous delivery: Every change that passes the automated tests is deployed to production automatically. Continuous deployment should be the goal of most companies that are not constrained by regulatory or other requirements.

l) What is a gem?

RubyGems is a package manager for the Ruby programming language that provides a standard format for distributing Ruby programs and libraries (in a self-contained format called a "gem"), a tool designed to easily manage the installation of gems, and a server for distributing them. The gem command is used to build, upload, download, and install Gem packages.