**DV162\_35\_SAS On Storage Devices**

**Possible Answer Sheet**

Q1. What is a hard drive?

Ans: Hard Drive is a device by which we can store data in our computers. It is non-volatile. It is also random access type memory. It consists of Spinning magnetic platters.

Q2. A hard drive consists of spinning \_\_\_\_\_\_\_\_\_\_\_\_\_.

Ans: Magnetic Platters.

Q3. Why are hard drives referred to as “non-volatile”?

Ans: Because it does not need power to retain data in it.

Q4. Why do we refer to access on a hard drive as “random access.”?

Ans. Because we don't have to rewind or forward to access the data like tape drives.

Q5. What are the components inside a hard drive?

Ans: Magnetic Platters, Spindle, Heads, arm, and circuit board.

Q6. What is a limitation of hard drives?

Ans: Mechanical Components of hard drives create limitations on how quickly we can store and retrieve data.

Q7. What is the eventual outcome of a hard drive?

Ans: Is moving parts break with time and eventually hard drives fail.

Q8. How does the data get stored and retrieved?

Ans: An actuator on the hard drive controls an arm that moves back and forth over these platters to be able to store or retrieve data.

Q9. What affects the speed of data retrieval?

Ans: Platters, as the faster they spin, the faster you’ll be able to retrieve the data.

Q10. If the drive is spinning faster, for example, at 15,000 rotations per minute, then the rotational latency lowers to about \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Ans: 2 milliseconds.

Q11. What does it mean if a common rotational speed for a low-end hard drive is 5,400 rotations per minute. And that gives you a rotational latency of about 5 and 1/2 milliseconds?

Ans. It means it takes around 5 milliseconds for the desired sector to rotate under the read-write head once it's positioned over the correct track. And this wait put us on long wait while retrieving smaller files.

Q12. What happens if the drive is spinning faster?

Ans: It retrieves and stores data faster.

Q13. What is the size of the hard drive in a larger desktop computer?

Ans: 3.5 inches.

Q14. What is a solid-state drive?

Ans. A solid-state drive (SSD) is a storage device that uses flash memory to store data, unlike traditional hard disk drives (HDDs) that use spinning magnetic disks. SSDs offer faster data access and transfer speeds

Q15. Why do we use non- volatile memory in SSD?

Ans.So it can retain stored data even when power is removed.

Q16. What is one significant advantage of an SSD?

Ans: Performance is so much faster than traditional HDDs.

Q17. What type of interface is often used for hard drives?

Ans: SATA interface.

Q18. What is the advantage of having a laptop or mobile device?

Ans: That they are very portable.

Q19. How does SATA limit the size of mobile devices?

Ans: SATA took quite a bit of room/space inside our mobiles.

Q20. What is mSATA?

Ans: mSATA stands for mini SATA, it is a smaller in size version of normal SATA.

Q21. What replaced the mSATA interface?

Ans: M.2 interface.

Q22. What is an example of a device that contains an mSATA drive?

Ans: Laptop.

Q23. How does the mSATA drive help reduce the overall size of devices?

Ans: mSATA is much smaller than installing a full-sized 2-and-1/2 inch drive inside of this chassis. This provided a great way to shrink down the overall size of these devices.

Q24. AHCI stands for the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Ans. Advance Host Controller Interface.

Q25. Why do we use AHCI?

Ans. To move the data from the storage drive into memory of our system we use AHCI.

Q26. \_\_\_\_\_\_\_\_\_\_\_\_\_uses a protocol known as AHCI.

Ans. SATA.

Q27. What is NVMe?

Ans: Non-Volatile Memory Express, and it is designed to match the throughputs that we would need for technologies such as SSD.

Q28. What is the throughput of SATA revision 3?

Ans: 600 Mbps.

Q29. What does lower latency and higher throughput mean?

Ans: Lower latency and higher throughput both refer to the speed at which your computer can access and transfer data on the drive.  
 Lower Latency: This refers to the reduced waiting time for your computer to access specific pieces of data on the SSD.  
 Higher Throughput: This signifies the increased speed at which data can be transferred between the SSD and your computer's memory.

Q30. What are the advantages of using M.2 instead of SATA?

Ans: M.2 does not need external power, M.2 is much smaller than SATA, can be connected directly to PCI Express bus providing much higher throughput.

Q31. What kind of interface is M.2?

Ans: It is Successor of mSATA and offers more versatility.

Q32. What type of throughput is typically seen when using an NVMe with an SSD through a by 4 PCIe interface?

Ans: 4 Gigabit/Sec throughput is typically seen when using an NVMe with an SSD through a by 4 PCIe interface.

Q33. What are the different keys in an M.2 interface?

Ans: The M.2 interface uses notches on the edge connector, called keys, to ensure compatibility between the SSD and the motherboard slot. Different keying ensures only the intended devices fit into the slot and prevents incorrect connections. Here's a breakdown of the common M.2 keys:  
 Key M: This key is typically used for PCIe NVMe SSDs.  
 Key B: This key is commonly used for SATA SSDs  
 Key B+M: This key combines notches from both B and M keys,  
 making the SSD compatible with both PCIe and SATA connections.

Q34. What should you do to ensure the best possible throughput for an M.2-based SSD?

Ans: We should ensure that our system supports NVMe.

Q35. How do I install an M.2 drive on my motherboard?

Ans: First find the M.2 interface on the motherboard and slide the SSD into that slot. Then fasten the SSD to the drive using a screw that’s on the other end of the SSD.

Q36. What does EEPROM stand for?

Ans: Electrically Erasable Programmable Read Only Memory.

Q37. EEPROM is a type of \_\_\_\_\_\_\_\_\_ memory.

Ans. Non-Volatile.

Q38. What are the advantages of flash memory?

Ans: Portable, No Moving Parts, Fast Speed, and Lower Power Consumption.

Q39. What is one concern with flash memory?

Ans: It does have a limit to the number of times you can write information to the drive.

Q40. Is it recommended to use flash drives as archival storage?

Ans: No, it is not recommended.

Q41. What type of flash memory do cameras and other mobile devices use?

Ans: SD type of Flash Memory i.e microSD.

Q42. What type of storage is becoming increasingly difficult to find on our systems?

Ans: Optical Drive.

Q43. What does an optical drive use to read small pits or different colors on an optical disk?

Ans: An optical drive uses Laser to read small pits or different colors on an optical disk.

Q44. What are some of the most popular formats of optical drives?

Ans: CD-ROMs, DVD-ROMs, and Blu-Ray.

Q45. Are there external drives available for internal laptop or desktop use?

Ans: Optical Drives are there external drives available for internal laptop or desktop use.