

ID-1705045

1-1

a) Disk-based DBMS: Storing is done in magnetic disk, processing is done in main memory and backup is in tertiary storage.

b) In-Memory DBMS: Storing is done in main memory, processing is done in main-memory too, and backup is in secondary storage.

1-2

a) Storage in a single platter.

$$= 2 \times (20000 \times 2000 \times 512 + 20000 \times 1000 \times 512) \text{ Byte}$$

$$= 6.14 \times 10^{10} \text{ Byte}$$

$$= 61.4 \text{ GB} \text{ [assuming } 1 \text{ GB} = 10^9 \text{ Byte]}$$

b) Storage in whole disk = $5 \times 61.4 \text{ GB}$

$$= 307.2 \text{ GB}$$

2-1

a) Block is required so that time taken for transfer is minimized. Smaller blocks need more time to transfer, but larger blocks waste more space.

b) Starting track for tables -

Customer - 1

Product - 10001

Sale - 20001

c) 2 seeks are required.

Seek 1: Disk head moves from track-1 to track-20001 to access Sale relation table.

Seek 2: Disk head moves ~~from~~ to track-1 again to access Customer relation table.

New seek is not required for 3rd query as Product table's starting track is next track of Customer table's ending track.