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Question-12

As per given data

Cycle time = 5nsec

Size of the instruction = 32 bit

Speed of the bus = 160 MBytes/sec.

For single 32bit instruction fetches and executes in 1nsec.

The Computer is made up of an Ultra4-SCSI disk that runs on the bus at a speed of 160 MBytes/sec, (or) it can be assumed to consist of 4 bytes per word.

Thus, the transfer rate of the disk is:

$$\begin{aligned}\text{Transfer rate} &= \frac{\text{Speed}}{\text{Word-size}} \\ &= \frac{160}{4} = 40 \text{ million words/sec.}\end{aligned}$$

From the above transfer rate, 200 million bus cycles per second the disk rate is

$$= \frac{40}{200} = 0.2$$

$$\begin{aligned}\text{Percentage slowness} &= 0.2 \times 100 \\ &= 20\%.\end{aligned}$$