Quiz Answer Key

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1. (a)

2. Three dependencies

$I_1 \leftrightarrow I_2$

$I_2 \leftrightarrow I_4$

$I_3 \leftrightarrow I_4$

frequency $= 2\,GHz$

$t = \frac{1}{2GHz} = 0.5\,ns$

	1	2	3	4	5	6	7	8	9	10	11
	IF	ID	EX	MEM	WB						
		IF	ID	EX	MEM	WB					
			IF	ID	EX	EX	EX	MEM	WB		
				IF	X	X	ID	EX	EX	MEM	WB

⇒ 11 cycles

⇒ Execution Time = $11 \times 0.5 = 5.5\,ns$

⇒ (c) 3, 5.5 ns

3. (c)

4. Transfer rate = 10 MBPS

Amount of data = 20 Kbytes

$= 20 \times 2^{10}$

Total time $= \dfrac{20 \times 2^{10}}{10 \times 2^{20}}$

$= 2 \times 2^{-10}$ s $\simeq 2 \times 10^{-3} = 2$ msec

Processor speed = 600 MHz

$= 600 \times 10^6$ cycles / sec

Cycles required by CPU = 300 + 900

$= 1200$

$\Rightarrow$ Time $= \dfrac{1200}{600 \times 10^6} = 2 \times 10^{-6}$

$= 0.002$ msec

% age of processor time consumed $= \dfrac{0.002}{2} \times 100 \times 1000$

$= .1\%$

$\Rightarrow$ (D)

5. (B) Both B and C are true only.