A. .

Insert between stage C and stage D.
$Throughput = \frac{1\,instruction}{(80+30+60+20)\,picoseconds} \cdot \frac{1{,}000\,picoseconds}{1\,nanosecond} \approx 5.26 GIPS.$
The latency is 380ps.

B. .

Between stage B and stage C and stage D and stage E.
$Throughput = \frac{1\,instruction}{(80+30+20)\,picoseconds} \cdot \frac{1{,}000\,picoseconds}{1\,nanosecond} \approx 7.69 GIPS.$
The latency is 390ps.

C. .

For a three-stage pipeline, we should have blocks A and B in the first stage, blocks C and D in the second, and blocks E and F in the third.
$Throughput = \frac{1\,instruction}{(30+60+20)\,picoseconds} \cdot \frac{1{,}000\,picoseconds}{1\,nanosecond} \approx 9.09 GIPS.$
The latency is 440ps.

D. .

The optimal design would be a five-stage pipeline, with each block in its own stage, except that fifth stage has blocks E and F. $Throughput = \frac{1\,instruction}{(80+20)\,picoseconds} \cdot \frac{1{,}000\,picoseconds}{1\,nanosecond} \approx 10 GIPS.$
The latency is 500ps.