

A1)

i3	i5	i7
Only dual core	both dual and quad core	both dual and quad core
3MB of cache	mostly 6MB cache	mostly 8MB cache
most support hyper threading	most don't support hyper threading	most don't support hyper threading
doesn't have turbo boost enabled	have turbo boost enabled	have turbo boost enabled
no AES-NI encryption instruction set	supports AES-NI encryption instruction set	AES-NI encryption instruction set
no Intel's vPro technology virtualization	supports Intel's vPro technology virtualization	supports Intel's vPro technology virtualization
integrated graphics processor restricted to a maximum clock speed of 1100 MHz, and all Core i3 processors have the 2000 series IGP, which is restricted to 6 execution cores	integrated graphics processor restricted to a maximum clock speed of 1100 MHz, and all Core i3 processors have the 2000 series IGP, which is restricted to 6 execution cores	The IGP on Core i7 processors can also reach a higher maximum clock speed of 1350 MHz. it also has 12 units
No K model, CPU is not unlocked	K model, CPU is unlocked	K model, CPU is unlocked

<http://www.brighthub.com/computing/hardware/articles/65861.aspx>

<http://www.expertreviews.co.uk/pcs/cpus/1400962/whats-the-difference-between-core-i3-i5-and-i7-processors>

The lab PC's use intel core i5 processors.

I think it's a good choice as:

- * Low price
- * less need for multitasking
- * less need for high graphics

A2)

laptop cpu:

Intel(R) Core(TM) i7-5557U CPU @ 3.10GHz

Number of Processors: 1

Total Number of Cores: 2

L2 Cache (per Core): 256 KB

L3 Cache: 4 MB

GFlops by linpack - 45.0774

Flops = 0.0450774TFlops
Power Rating - 37 W

phone cpu: 1 GHz dual-core ARM Cortex-A9

Flops = 130.23 GFlops
Power Rating - Na

A4)
Haswell is successor to the Ivy Bridge microarchitecture.
Haswell uses the new LGA1150 socket

Haswell has Variable Base clock

Fully integrated voltage regulator

Haswell has New instructions(HNI, includes Advanced Vector Extensions 2 (AVX2), gather, BMI1, BMI2, ABM and FMA3 support)

haswell has the instruction decode queue, which holds instructions after they have been decoded and unlike ivy bridge is no longer statically partitioned between the two threads that each core can service

Haswell Less possibility of overlocking than ivy bridge

Haswell has advanced power-saving system. Haswell actually runs cooler at stock speeds. It is only when pushing the limits of overclocking . Haswell does have a higher TDP (thermal design power)that the heat issues raise exponentially.

Haswell has Hardware graphics support for Direct3D 11.1 and OpenGL 4.3 while ivy bridge has directX 11 and OpenGL 4.0 supported.

Haswell also have L4 cache - 128 MB of eDRAM (Iris Pro models only) unlike jivybridge with no l4 cache

<http://www.tomshardware.com/answers/id-2059427/ivy-bridge-haswell-clarifications.html>
[https://en.wikipedia.org/wiki/Haswell_\(microarchitecture\)](https://en.wikipedia.org/wiki/Haswell_(microarchitecture))
[https://en.wikipedia.org/wiki/Ivy_Bridge_\(microarchitecture\)](https://en.wikipedia.org/wiki/Ivy_Bridge_(microarchitecture))

a3)
load averages: 1.78 1.63 1.66
1 [36.3%] Tasks: 246 total, 1 running
2 [7.0%] Load average: 2.13 1.84 1.70
3 [39.1%] Uptime: 3 days, 14:11:58
4 [8.3%]
Mem[6951/8192MB]
Swp[242/1024MB]
Temprature 34 Degree celsius

A5)

Assuming a intel Xeon dual CPU with 100% load all the time.

Power consumed in watts - 400W

Hourly Units = Wattage ÷ 1000

= 400 / 100 = 0.4

Hourly cost for 1 server = 0.4 * 9 = Rs 3.6

Cost for running 100 servers per year = 3.6 * 1000 * 24 * 365 = **Rs 31,536,000**

Cost of 100 servers = 3 lakh * 1000 = 3000000000 Rs

It is 9.5129375951 times more

<http://www.tomshardware.com/reviews/intel-xeon-e5-2600-v3-haswell-ep,3932-9.html>

<http://www.tomshardware.com/reviews/xeon-e5-2687w-benchmark-review,3149-11.html>