Chapter 5

14. (a) Device driver.

(b) Device driver.

(c) Device-independent software.

(d) User-level software.

28. Consider,

(a) The capacity of a zone is tracks × cylinders × sectors/cylinder × bytes/sect.

Capacity of zone 1: 16 × 100 × 160 × 512 = 131072000 bytes

Capacity of zone 2: 16 × 100 × 200 × 512 = 163840000 bytes

Capacity of zone 3: 16 × 100 × 240 × 512 = 196608000 bytes

Capacity of zone 4: 16 × 100 × 280 × 512 = 229376000 bytes

Sum = 131072000 + 163840000 + 196608000 + 229376000 = 720896000

(b) A rotation rate of 7200 means there are 120 rotations/sec. In the 1 msec track-to-track seek time, 0.120 of the sectors are covered. In zone 1, the disk head will pass over 0.120 × 160 sectors in 1 msec, so, optimal track skew for zone 1 is 19.2 sectors. In zone 2, the disk head will pass over 0.120 × 200 sectors in 1 msec, so, optimal track skew for zone 2 is 24 sectors. In zone 3, the disk head will pass over 0.120 × 240 sectors in 1 msec, so, optimal track skew for zone 3 is 28.8 sectors. In zone 4, the disk head will pass over 0.120 × 280 sectors in 1 msec, so, optimal track skew for zone 3 is 33.6 sectors.

31. (a) 10 + 12 + 2 + 18 + 38 + 34 + 32 = 146 cylinders = 876 msec.

(b) 0 + 2 + 12 + 4 + 4 + 36 +2 = 60 cylinders = 360 msec.

(c) 0 + 2 + 16 + 2 + 30 + 4 + 4 = 58 cylinders = 348 msec.