1. a) FCFS

|2150 – 2069| + |2069 – 1212| + |1212 – 2296| + |2296 – 2800| + |2800 – 544| + |544 – 1618| + |1618 – 356| + |356 – 1523| + |1523 – 4965| + |4965 – 3681| = 81 + 857 + 1084 + 504 + 2256 + 1074 + 1262 + 1167 + 3442 + 1284 = 13011

13011 cycles

b) SSTF

|2150 – 2069| + |2069 – 2296| + |2296 – 2800| + |2800 – 3681| + |3681 – 4965| + |4965 – 1618| + |1618 – 1523| + |1523 – 1212| + |1212 – 544| + |544 – 356| = 81 + 227 + 504 + 881 + 1284 + 3347 + 95 + 311 + 668 + 188 = 7586

7586 cycles

c) SCAN

|2150 – 2296| + |2296 – 2800| + |2800 – 3681| + |3681 – 4965| + |4965 – 4999| + |4999 – 2069| + |2069 – 1618| + |1618 – 1523| + |1523 – 1212| + |1212 – 544| + |544 – 356| = 146 + 504 + 881 + 1284 + 34 + 2931 + 451 + 95 + 311 + 668 + 188 = 7492

7492 cycles

d) LOOK

|2150 – 2296| + |2296 – 2800| + |2800 – 3681| + |3681 – 4965| + |4965 – 2069| + |2069 – 1618| + |1618 – 1523| + |1523 – 1212| + |1212 – 544| + |544 – 356| = 146 + 504 + 881 + 1284 + 2896 + 451 + 95 + 311 + 668 + 188 = 7424

7424 cycles

e) C-SCAN

|2150 – 2296| + |2296 – 2800| + |2800 – 3681| + |3681 – 4965| + |4965 – 4999| + |4999 – 0| + |0 – 356| + |356 – 544| + |544 – 1212| + |1212 – 1523| + |1523 – 1618| + |1618 – 2069| = 146 + 504 + 881 + 1284 + 34 + 4999 + 356 + 188 + 311 + 668 + 95 + 451 = 9917

9917 cycles

f) C-LOOK

|2150 – 2296| + |2296 – 2800| + |2800 – 3681| + |3681 – 4965| + |4965 – 356| + |356 – 544| + |544 – 1212| + |1212 – 1523| + |1523 – 1618| + |1618 – 2069| = 146 + 504 + 881 + 1284 + 4609 + 188 + 668 + 311 + 95 + 451 = 9137

9137 cycles

1. a)
2. a) 75000 hours / 1000 disk drives = 750 hours per failure / 24 hours ≈ 31 days which is once per month

Once per month best describes the drive failure rate

b) Since there is a 1:1000 chance of dying between the age of 20 – 21 years.

8760 human hours per failure / 0.001 death chance = 8760000 hours ≈ 1000 years

This tells us absolutely nothing about the expected lifetime of a 20-year-old

c) Since MTBF tells us nothing about the expected lifetime, we must do a bit of research. Hard disk drives usually have a lifetime of about 5 years. If a disk actually has a 1-million-hour MTBF then it most likely won’t fail during its expected lifetime.

1. a) Contiguous: Linked: Indexed:

b) Contiguous: Linked: Indexed:

1. s

10. 17

12.15

13.4