Summary in Graph

Exam Summary (GO Classes Test Series 2024 | CO and Architecture | Test 4)

Qs. Attempted:	**11** 5 + 6	**Correct Marks:**	**13** 5 + 8
Correct Attempts:	**9** 5 + 4	**Penalty Marks:**	**0** 0 + 0
Incorrect Attempts:	**2** 0 + 2	**Resultant Marks:**	**13** 5 + 8

Total Questions:	**15** 5 + 10
Total Marks:	**25** 5 + 20
Exam Duration:	**45 Minutes**
Time Taken:	**45 Minutes**

EXAM RESPONSE | EXAM STATS | FEEDBACK

Technical

Q #1 | Multiple Choice Type | Award: 1 | Penalty: 0.33 | CO and Architecture

Of the following, which best characterizes computers that use memory-mapped I/O?

A. The computer provides special instructions for manipulating I/O ports.
B. I/O ports are placed at addresses on the bus and are accessed just like other memory locations.
C. To perform an I/O operation, it is sufficient to place the data in an address register and call the channel to perform the operation.
D. Ports are referenced only by memory-mapped instructions of the computer and are located at hardwired memory locations.

Your Answer: B | **Correct Answer: B** | Correct | Discuss

Q #2 | Multiple Choice Type | Award: 1 | Penalty: 0.33 | CO and Architecture

Which of the following is true of interrupts?

A. They are generated only when memory cycles are "stolen".
B. They are used in place of data channels.
C. They can indicate completion of an I/O operation.
D. They cannot be generated by arithmetic operations.

Your Answer: C | Correct Answer: C | Correct | Discuss

Q #3 | Multiple Choice Type | Award: 1 | Penalty: 0.33 | CO and Architecture

Consider a disk with the following characteristics :

- Average seek time $= 8$ msec
- Average rotational delay $= 3$ msec
- Maximum rotational delay $= 6$ msecs
- Spindle speed $= 10,000$ rpm
- Sectors per track $= 170$ sectors
- Sector size $= 512$ bytes

What is the average time to read one sector?

A. 10
B. 11.03
C. 12.35
D. 14.22

Your Answer: B | Correct Answer: B | Correct | Discuss

Q #4 | Numerical Type | Award: 1 | Penalty: 0 | CO and Architecture

Consider a system which uses a hard disk for storage. The task of managing the hard disk comes under the operating system. It is very important to keep track of occupancy of the hard disk i.e., which block is empty or which block is already occupied. A particular disk unit uses a bit string to record the vacancy and occupancy of its tracks, with 0 denoting vacant and 1 denoting occupied. A 32 bit segment of this string has hexadecimal value F1E0FA36. The percentage of empty track for the corresponding part of the disk, to the nearest percentage is _____ (upto two decimal places)

Your Answer: 43.75 | Correct Answer: 43.75 | Correct | Discuss

Q #5 | Multiple Choice Type | Award: 1 | Penalty: 0.33 | CO and Architecture

Disk requests come in a disk queue for cylinders $5, 15, 73, 90, 11, 4, 55, 42$ in order. One end of the disk is at cylinder 0 and another end is at cylinder 99.

If the disk head is currently 60, then how many total head movements will occur, if SSTF scheduling technique is used?

A. 134
B. 142
C. 146
D. 150

Your Answer: B | Correct Answer: B | Correct | Discuss

Q #6 | Multiple Choice Type | Award: 2 | Penalty: 0.67 | CO and Architecture

The unsigned integer $3,505,468,161$ can be written in 32-bit binary as

$11010000\ 11110001\ 00110011\ 00000001.$

Putting it into four bytes of memory beginning at address 98370 in big-endian fashion would give which picture?

A.

98370	98371	98372	98373
11010000	111100001	00110011	00000001

B.

98370	98371	98372	98373
00000001	111100001	00110011	11010000

C.

98370	98371	98372	98373
00000001	00110011	111100001	11010000

D.

98370	98371	98372	98373
00110011	00000001	11010000	111100001

Your Answer: A **Correct Answer: A** Correct Discuss

Q #7 Numerical Type Award: 2 Penalty: 0 CO and Architecture

Seek time is the time required to move the disk arm to the required track. The time it takes for the beginning of the sector to reach the head is known as rotational delay, or rotational latency. A magnetic disk has average seek time of $6\ \mathrm{ms}$, rotational speed of $20,000$ rotations per minute (rpm), and 1024-byte sectors with 400 sectors per track. Rotational delay to access each sector is the time required for half a rotation on average. Suppose that we wish to read a file consisting of 500 sectors that are distributed randomly over the disk, So, for every read we need to apply seek. The estimated total time (in milliseconds) needed to read the entire file is _____

Your Answer: **Correct Answer: 3753.75** Not Attempted Discuss

Q #8 Numerical Type Award: 2 Penalty: 0 CO and Architecture

Seek time is the time required to move the disk arm to the required track. The time it takes for the beginning of the sector to reach the head is known as rotational delay, or rotational latency. A magnetic disk has average seek time of $6\ \mathrm{ms}$, rotational speed of $20,000$ rotations per minute (rpm), and 1024-byte sectors with 400 sectors per track. Rotational delay to access each sector is the time required for half a rotation on average. Suppose that we wish to read a file consisting of 1400 sectors. Let us assume that the file is stored as compactly as possible on the disk. That is, the file occupies the sectors on 4 adjacent tracks, all the sectors of 3 tracks and 200 sectors of fourth track, So, only for the starting position of the file we need to necessitate seek, so the remaining adjacent tracks can be read with essentially no seek time. The estimated total time (in milliseconds) needed to read the entire file is _____

Your Answer: **Correct Answer: 22.5** Not Attempted Discuss

Q #9 Multiple Choice Type Award: 2 Penalty: 0.67 CO and Architecture

The time taken to access a file that is stored on a hard disk is affected significantly by how data is stored on disks. The bottleneck of a disk access is moving the read/write arm. So it makes sense to store a file in tracks that are below/above each other in different surfaces, rather than in several tracks in the same surface. Consider a file with $50,000$ records of fixed length, 256 bytes per record. This file is stored on a hard disk in which we have 512 bytes per sector, 63 sectors per track, 16 tracks per cylinder, and total 4092 cylinders. File is stored in consecutive cylinders in such a way that first it is stored in a cylinder then in adjacent cylinder and so on. How many cylinder are needed to store this file?

A. 26
B. 20.60
C. 24.80
D. 30.50

Your Answer: | **Correct Answer: C** | Not Attempted | Discuss

Q #10 Numerical Type | Award: 2 | Penalty: 0 | CO and Architecture

A computer has a cache, main memory, and a disk. If a referenced word is in the cache, 10 ns are required to access it. If it is in the main memory but not in the cache, 50 ns are required to load it into the cache, and then the reference is started again. If the word is not in the main memory, 10 ms are needed to load it from the disk to main memory, followed by 50 ns to copy it to the cache, and then the reference is started again. The cache hit ratio is 0.8 and the main memory hit ratio is 0.7. What is the average time needed to access a referenced word (in nsec)?

Your Answer: 623 | **Correct Answer: 600020** | Incorrect | Discuss

Q #11 Multiple Choice Type | Award: 2 | Penalty: 0.67 | CO and Architecture

Disk requests come in a disk queue for cylinders $5, 15, 73, 90, 11, 4, 55, 42$ in order. One end of the disk is at cylinder 0 and another end is at cylinder 99.
If SCAN scheduling is used, what will be the difference of the total head movements if the head is moving towards 0 and if the head is moving towards 99? (Initially the head is at cylinder 60.)

A. 0
B. 2
C. 16
D. 21

Your Answer: C | **Correct Answer: C** | Correct | Discuss

Q #12 Multiple Choice Type | Award: 2 | Penalty: 0.67 | CO and Architecture

A block of "105 words of memory" is used for dynamic storage for objects of sizes 3 and 10 words. The operations supported by the storage are:

- $\mathrm{x} := \mathrm{alloc}(\mathrm{n})$ {Allocate any block of n consecutive words and return its starting address ; note that 3 and 10 are the only legal values for n. }
- $\mathrm{free}(\mathrm{y})$ {Make the previously allocated block starting at address y available for re-use. }

At a point where a certain request for allocation of a block of words cannot be granted because of a lack of a sufficiently long block of consecutive words to fill that request, what is the minimum possible number of words that might actually be in use?

A. 10
B. 24
C. 53
D. 96

Your Answer: | **Correct Answer: B** | Not Attempted | Discuss

Q #13 Multiple Choice Type | Award: 2 | Penalty: 0.67 | CO and Architecture

```
    if A > B then
        V[i] := F(i)
    else
        If B > C then
5.          V[i] := G(i)
```

Assume that the values of the Boolean expressions "$\mathrm{A} > \mathrm{B}$" and "$\mathrm{B} > \mathrm{C}$" are independent and that, on the average, "$\mathrm{A} > \mathrm{B}$", 75 percent of the time and "$\mathrm{B} > \mathrm{C}$", 25 percent of the time. If the program segment above is executed $10,000$ times, how many times would one expect the functions F and G to be executed?

A. $\mathrm{F} : 2,500, \mathrm{G} : 18,750$
B. $\mathrm{F} : 7,500, \mathrm{G} : 625$
C. $\mathrm{F} : 7,500, \mathrm{G} : 1,875$
D. $\mathrm{F} : 7,500, \mathrm{G} : 2,500$

Your Answer: B | **Correct Answer: B** | Correct | Discuss

Q #14 Numerical Type | Award: 2 | Penalty: 0 | CO and Architecture

Let the decimal equivalents for these IEEE 754 (Single precision) floating point numbers be a, b respectively.

- a : 0 01111111 00000000000000000000000
- b : 1 01111110 10000000000000000000000

Then $\mathrm{a} + \mathrm{b} =$ _____

Your Answer: 0.25 | **Correct Answer: 0.25** | Correct | Discuss

Q #15 Numerical Type | Award: 2 | Penalty: 0 | CO and Architecture

A machine has a base CPI of 2 clock cycles. Measurements obtained show that the instruction miss rate is 12% and the data miss rate is 6%, and that on average, 30% of all instructions contain one data reference. The miss penalty for the cache is 10 cycles. What is the total CPI?

Your Answer: 3.40 | **Correct Answer: 3.38** | Incorrect | Discuss

You're doing good, you can target above 70 percentage!