FINAL EXAM

1) C

2) A and B

3) C

4) F

5) C

6) -Incremental backup backs up all changes made since the last backup procedure, of any kind.

-Differential backup backs up ONLY the changes made since the last full backup.

7) RAID 0 uses 2 disks to split data 50/50 between both discs, which is referred to as “striping”. The advantage of this is speed and a performance boost, but there is no data redundancy.

8) RAID 5 AND RAID 6

9) Backups are like insurance for data loss from any number of causes, such as drive failure, data corruption, malware, etc. By having a copy or multiple copies of your data backed up, you ensure that losing one copy doesn’t mean that data is lost forever. Backing up data also allows you to “rewind” that data to an earlier state.

10) B

11) A

12)

A. 129(10)=?(16)

129/16=8.0625 R=0.0625\*16=1

8/16=0.5 R=0.5\*16=8

Answer: 81

B. F2569 (16)=?(10)

| F | 2 | 5 | 6 | 9 |
| --- | --- | --- | --- | --- |
| 16^4 | 16^3 | 16^2 | 16^1 | 16^0 |
| 65,536 | 4096 | 256 | 16 | 1 |
| 15\*16^4 | 2\*16^3 | 5\*16^2 | 6\*16^1 | 9\*16^0 |
| 983,040 | 8192 | 1280 | 96 | 9 |

983,040 + 8192 + 1280 + 96 + 9=992,617

Answer: 992617

13)

A. 10111010(2) = ?(10)

| 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 2^7 | 2^6 | 2^5 | 2^4 | 2^3 | 2^2 | 2^1 | 2^0 |
| 128 | 64 | 32 | 16 | 8 | 4 | 2 | 1 |
| 1\*2^7 | 0\*2^6 | 1\*2^5 | 1\*2\*4 | 1\*2^3 | 0\*2^2 | 1\*2^1 | 0\*2^0 |
| 128 | 0 | 32 | 16 | 8 | 0 | 2 | 0 |

128 + 0 + 32 + 16 + 8 + 0 + 2 + 0=186

Answer: 186

B. 753(10)=?(2)

753/2=376.5 R=0.5\*2=1

376/2=188 R=0

188/2=94 R=0

94/2=46 R=0

47/2=23.5 R=0.5\*2=1

23/2=11.5 R=0.5\*2=1

11/2=5.5 R=0.5\*2=1

5/2=2.5 R=0.5\*2=1

2/2=1 R=0

1/2=0.5 R=0.5\*2=1

Answer: 1011110001

14) FALSE. An ALU (Arithmetic Logic Unit) is the part of a CPU that is responsible for carrying out arithmetic and logic functions.

15) TRUE. RAM is volatile memory, so is only temporarily stored. Turning off the computer would reset RAM to 0 (off).

16) FALSE. Truth tables are a multidisciplinary concept that can be applied to a wide range of fields. Different fields will use their own symbology and structure, but the basic concepts and methodology are the same

17) FALSE. Backups have a wide variety of functions, including security by way of data redundancy, data recovery after a disaster, and being able to “rewind” data to a previous state

18) FALSE. Monitors are output devices, as they receive electrical signals in order to output data in the form of images.

19) TRUE. Keyboards and mice are examples of devices used to input data into a computer rather than receive it, such as printers.

20) FALSE. Speakers are output devices, as they receive electrical signals from the computer and output those signals as sound

21) FALSE. Backups are useful for anyone who wants to have copies of their data. Even someone who only has pictures or resumes for example, would benefit from having multiple copies in different locations so that if one copy is lost, other copies still exist.

22) FALSE. As incremental backups function by backing up only changes made since the last backup cycle, this is not a function exclusive to RAID 5, or to RAID setups in general. RAID 5 uses “striping”, which is breaking up the data across multiple hard drives, as well as having at least one hard drive dedicated to parity, which allows for the rebuilding of data using the other hard drives in the RAID system.

23. FALSE. Cache is the fastest memory available to the computer, as it is the memory closest to the CPU. Cache memory is split into multiple layers (L1, L2, L3) and the closer it is to the CPU, the faster it is.

24. FALSE. The MAC address is a physical address of a component, is hardware based, and is set by the manufacturer. An IP address is used to identify a network (internet) address, and is typically set by the network administrator, or by the ISP (Internet Service Provider).

25. FALSE. A truth table is a logical breakdown to determine if something is true or false. Half values do not exist in truth tables, as a truth table is used to determine IF something is true or false, and the conditions necessary for that result. There cannot be simultaneous true and false outcomes.

26. Moore’s Law is a concept or idea (not an actual law), that the number of transistors on an integrated circuit doubles roughly every two years, due to improvements in manufacturing and cost reductions. This is more of an observation based on historical trends and is not based on any kind of law of physics, so calling it a law is a bit of a misnomer.

27) The ALU is part of the CPU. ALU is responsible for mathematical and logical operations, and the CPU is responsible for carrying out instructions that operate the computer.

28) Overclocking is the process of increasing the clock speed (fetch-execute cycle) of a component to run faster than what was originally set by the manufacturer. This allows the component to perform more operations per second. Underclocking is the opposite, and reduces the speed of the fetch-execute cycle in order to save power.

29) An XNOR gate is an exclusive NOR gate. It requires that both inputs be true or both inputs be false for the output to be true.

30) A database is an organized collection of information. They can be stored on a computer or in a cloud based system. A database allows for access, management, and manipulation of data.

31)

| A | B | A^B | AvB | A↓B | A⊻B | A⊙B |
| --- | --- | --- | --- | --- | --- | --- |
| T | T | T | T | F | F | T |
| T | F | F | T | F | T | F |
| F | T | F | T | F | T | F |
| F | F | F | F | T | F | T |

32) The entire internet is estimated to be about 5 exabytes, and this information is contained in electrons. Although miniscule, electrons do have physical mass, and using a kindle full of ebooks as a baseline example, Russel Seitz determined that a kindle full of books weighed 0,000000000000000001 grams more than an empty kindle. Scaled up, this is 50 grams, about the weight of a large strawberry.

33) By using successive powers of 2 as binary only has 2 digits, 1 and 0.