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SUMMARY QUIZ10.SOLUTION

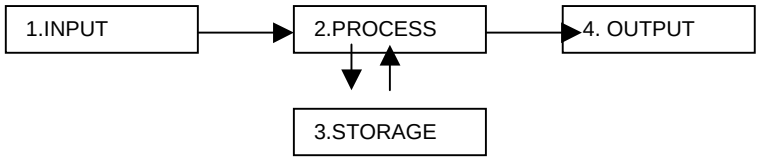
X3091 __ __ __ Name:.....

X3091 __ __ __

Section I			Section II			
Definitions	24		Hardware	8		Section I
Environment	16		Binary / ASCII	30		Section II
Operating System	10		Acronyms	12		Total
Sub-Total	50		**Sub-Total**	50		Percentage

DEFINITIONS

1 Below is an incomplete diagram used in defining "What is a computer." Label each element in the following diagram, and connect arrows where appropriate. (1 + 1 + 1 + 1 + 1 + 1 + 1 marks)



2 In your own words, and using the above diagram as a reference point, describe "What is a computer ?" (1 + 1 + 1 + 1 + 1 + 1 + 1 + 1 marks)

A digital computer is a machine that can be programmed to accept data (input) and process it into information (output). Where necessary the computer may use storage devices to store information. A classical definition, supported by the below chart defines a computer as:

A computer is a device that accepts **input**, **processes** data, **stores** data and produces **output**.

3 Give at least two examples of devices for each of the "boxes" shown above. Name the "box" your are referring to. (2 + 2 + 2 + 2 marks)

1.INPUT Keyboard, Mouse, Scanner, Camera, Sound	3.STORAGE Hard Disk, Floppy Disk, RAM, ROM, TapeDrive, Jaz, ZIP
2.PROCESS Intel Pentium, AMD K6, Compaq Digital Alpha, Motorola PowerPC, IBM PowerPC, Cyrix	4.OUTPUT Printer, Monitor, Lights, Sound, Plotter, Camera, Film

ENVIRONMENT

4 Describe the problem that can occur to computers by the environmental problem of "Humidity," and what is one solution to this problem? (2 + 2 marks)

Humidity, moisture content of the atmosphere. The atmosphere contains moisture in the form of water vapor in varying amounts depending on the temperature. The amount of vapor that will saturate air increases with a rise in temperature.

Humidity, in Pacific Islands such as Tonga, carry water vapor as well as salt particles mixed with the water. Problems occur when the air cools inside the computer, so the water vapor condenses and forms a solid leaving on the computer the salt. The solid salt over time gradually 'eats' at the silver soldering that joins the electronic components together. Like rust eating away at metal, the effect of the salt causes a 'break' in the connection thereby preventing the electronic components from correct contact with each other.

This break may cause computers to function incorrectly, or may even cause complete system failure (unable to function in any form.)

Solution: One solution, minimising humidity, is to store computers in a well sealed room with an air-conditioner to control moisture, humidity. By lowering the air temperature, air-conditioning lowers the amount of moisture that can saturate air. Many air-conditioners also have a "de-humidifier" function which takes moisture from the air.

5. What is a power surge and what problem can this cause to your computer. Provide one solution to minimise the effects of a power surge to your computer. (2 + 2 + 2 marks)

Surge: A sudden—and possibly damaging—increase in line voltage.
Problem: Can damage the electrical works in a computer.
UPS. **Surge Protector**, also called a surge suppressor. A computer device that prevents potentially damaging power surges in an electrical current from reaching a computer or other device. Surge protectors work by collecting and diffusing excess power.

6. What is a power spike and what is a common cause of a power spike. Provide one solution to minimise the effects of a power spike to your computer. (2 + 2 + 2 marks)

Spike: A sudden—and possibly damaging—high increase in line voltage
Common Cause: Electrical lightning strike on the electric powerlines usually dissipate (spread) through the electrical wires until the electric current can run to the earth. The high voltage increase sometimes spreads into house electrical systems.
Solution: One solution is to use an UPS, although this is just setting up a defensive line. Another and more effective system is to set circuit breakers on the house wiring, and to unplug all electrical equipment during a lightning storm.

OPERATING SYSTEM

7. The Operating System manages a number of different activities of the computer. List at least four major functions that are the responsibility of the Operating System (1 + 1 + 1 + 1 marks)

1. File Management
2. Memory Management
3. Process Management
4. Device Communication, Management

8. Provide a description for two functions of an Operating System as listed above. (2 + 2 marks)

Communicating with devices/peripherals. Some of the most complex tasks performed by a computer involve communicating with computer monitors, printers, disk drives, and other peripheral devices. A computer's operating system generally includes programs to handle these tasks for applications.

This is why in Windows 95/98 if we connect a new printer to the computer, or on the network, we have to configure the operating system to tell it what the new device is so it can install the software it requires to let applications print correctly to the printer.

Programs used as part of an operating system to communicate with a control device is often referred to as a 'device driver' or 'driver'. In the context of the Windows operating system, device drivers for printers are often referred to as Printer Drivers, while device drivers for Display Cards are often referred to as Display Drivers.

File System. Storage devices are an important part of the continuing operation and recordings of an operating system. A key component of general purpose operating systems is the management of secondary storage devices, and the allocation of storage units (commonly referred to as files.)

Process Management. A key attribute, function, of operating systems is to organise the use of CPU time by other programs. This function includes loading the program into memory, allocating it time and then executing the instructions in the program by passing it to the CPU.

Memory Management. When several software instructions are being processed, one of the tasks for the operating system is to keep track of the free space in the computer's memory and to make sure that no application task corrupts another application's memory area.

The more capable hardware and operating systems include a number of more complex tasks for the operating system to perform to maximise use of the hardware features and to increase the usefulness of the operating system for applications developers.

9. Describe one difference between a Disk based Operating System and a chip-based Operating System (2 marks)

A disk based OS is contained on a disk (such as a HD) and can be changed, whereas a chip-based OS is stored on a chip (such as ROM) and is faster, but cannot be changed. Chips are more expensive than disk space so disk based OSs can be larger and have more features.

HARDWARE

10 Describe one technology, material, difference between RAM and Disk Storage ? (if you cannot understand this question, list all the differences that you know) (1 mark)

- RAM and ROM are electronic storage devices whereas Disk storage is magnetic.
- RAM/ROM are faster than Disk, but are more expensive. Because disk is cheaper, more storage is available on disk.
- Magnetic storage retains its stored information when power is turned off, whereas RAM electronic storage is lost when power is turned off.
- Information stored in ROM is not lost when power is turned off, but because it cannot be changed as easily as RAM and Disk storage, ROM is not as effective a general purpose storage as RAM and Disk.

11 What effect does the technical difference between RAM and Disk Storage have on the speed, storage, and cost ? (Hint: Describe whether RAM or Disk Storage is faster/slower etc.) (1 + 1 + 1 mark)

1. Speed

RAM storage is faster than Disk

2.Storage

Disk is cheaper, and therefore more storage is affordable (generally available)

3.Cost

Magnetic storage devices are cheaper than electronic storage devices.

12. When turning on and off a computer, we should go through the computer's "shutdown process". Describe why we should use the "shutdown process." (2 marks)

Correctly following the "shutdown process" allows the operating system to tell all programs to close down correctly and close all outstanding work. Without following the shutdown process, just turning the computer off, may result in files being lost.

Lost files might be retyped, if they were only small letters, but if the file that is lost is a big document or an important part of the program and operating system than the computer may fail to work correctly.

13. Describe the steps you would use to change the time shown on your computer. (2 marks)

- Double click with the left mouse on the "Time" displayed on the "Task Bar"
- Change the date and Time on the displayed Calendar

BINARY AND ASCII

14. Translate the following Binary numbers, to their Decimal equivalent (5 marks)

Binary	Decimal
100 1110	78
1101 0000	208
10 1010	42
1 0001 0100	276
100 1001	73

15. Convert the following ASCII text to ASCII binary (15 marks)

100 1000	H	T	101 0100	W	101 0111
100 0101	E	O	100 1111	H	100 1000
100 1100	L	D	100 0100	I	100 1001
100 1100	L	A	100 0001	L	100 1100
100 1111	0	Y	101 1001	E	100 0101

16. Convert the following ASCII binary to ASCII text (10 marks)

100 0110	F	101 0100	T
101 0010	R	100 1111	O
100 1001	I	100 0100	D
100 0100	D	100 0001	A
100 0001	A	101 1001	Y

ACRONYMS AND PHRASES:

1 Define the meaning of the following acronyms and phrases commonly found in the Computer Industry: (12 marks)

Acronym	Extended Meaning	Acronym	Extended Meaning
WIMP	Windows, Icons, Mouse Pointers	CRT	Cathode Ray Tube
ASCII	American Standard for Information Interchange	RAM	Random Access Memory
Bit	Binary Digit	FD	Floppy Disk
OS	Operating System	HD	Hard Disk
CD	Compact Disk	ESC	Escape
ROM	Read Only Memory	GUI	Graphical User Interface