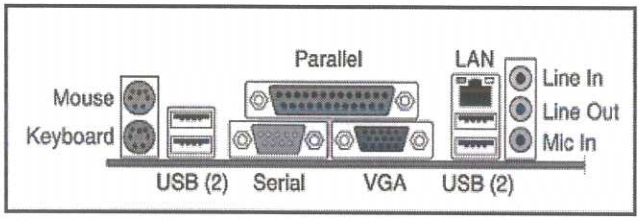
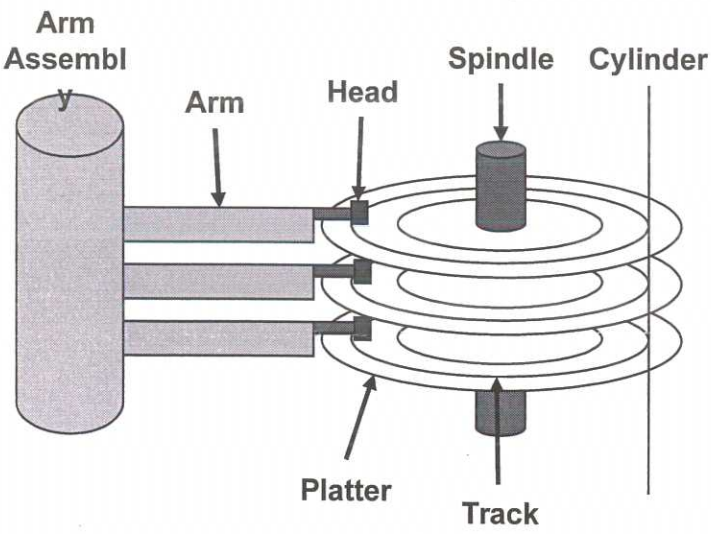
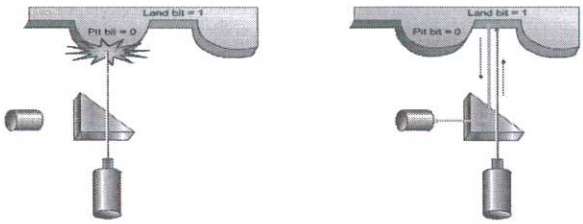
	COMPUTER SYSTEM HARDWARE(4131) ANSWER KEY		
Q no	**Scoring Indicators**	**split score**	**Total score**
I	**PART A**		
1	BIOS boot, Boot device selection, CMOS setting....	2	2
2	A chipset is a group of small circuits that coordinate the flow of data to and from a PC's key components.Eg: NorthBridge and South bridge.	2	2
3	Switched mode power supply.	2	2
4	Network Card, Sound Card, Video Card...	2	2
5	USB Ports, HDMI port, Display Port ...	2	2
II	**PART B**		
1	Explain any 3 component	3x2	6
2	Block diagram and Explanation	3+3	6
3	The recording of redundant data for fault tolerant operation. Data are written on two separate disks within the same system. Each disk drive is connected to its own controller.		6
4	Need (3marks) , Procedure(3marks)	3+3	6
5	When a fluctuating electric current flows through the coil, it becomes a temporary electromagnet, attracted and repelled by the permanent magnet . As the coil moves, it moves the cone back and forth, pumping sound waves into the air.		6
6	Any 3 Comparison Laptop Vs Desktop.	3x2	6
7	A netbook is a small, light, low-power notebook computer that has less processing power than a full-sized laptop but is still suitable for word processing, running a Web browser and connecting wirelessly to the Internet. A small laptop computer designed primarily for accessing Internet-based applications. Netbooks are generally cheaper than a regular laptop,Netbook has less processing power and storage space than a laptop computer Most of netbook not include CD/DVD drive..		6
III (a)	An expansion slot is a socket on the motherboard that is used to insert an expansion card (or circuit board), which provides additional features to a computer such as video, sound, advanced graphics... 1.ISA stands for Industry standard architecture. 2.PCI stands for Peripheral Component Interconnect. 3.PCI-X stands for PCI Extended. 4.PCIe stands for PCI Express.	4x2	8
(b)	DRAM is dynamic random access memory. DRAM is volatile memory that will lose all its stored information if it is disconnected from the power source. **Asynchronous DRAM :** It is called "asynchronous" because		7

	memory access is not synchronized with the computer system clock. **FPM DRAM:** FPM (Fast Page Mode DRAM) was most common kind of DRAM in personal Computer.FPM DRAM allows faster access to data in the same row or page . **EDO DRAM** (Extended Data Out Dynamic Random Access Memory, **BEDO DRAM** (Burst Extended Data Output DRAM) **(SDRAM):**Synchronous Dynamic Random Access Memory. **SDR SDRAM:**(Single Data Rate synchronous DRAM) **DDR SDRAM:** (Double Data Rate-Synchronous DRAM) **DDR2 SDRAM, DDR3 SDRAM, DRDRAM** (Direct Rambus Dynamic Random Access Memory).		
IV (a)		List (3) + Exp(5)	8
(b)	**BIOS** stands for Basic Input/Output System. BIOS is a "read only" memory, which consists of low-level software that controls the system hardware and acts as an interface between the operating system and the hardware. Most people know the term BIOS by another name device drivers, or just drivers. BIOS is essentially the link between the computer hardware and software in a system. **POST** is a series of system checks performed by the system BIOS. POST routine verifies the integrity of the BIOS itself. POST also verifies and confirms the size of primary memory . Once POST has completed successfully, the BIOS selects the boot device highest in the configured boot order and executes the master boot record (MBR).The POST process can end with a beep code or displayed code that indicates the issue discovered.	3.5+3.5	7
V (a)	**PATA** uses the classic 40-pin connector for parallel data communications.whereas **SATA** uses a more modern 7-pin card-edge connector for serial data transfer.The design of IDE(Integrated Drive Electronics) is simple. IDE generically refers to any drive that has a built-in controller. Short for Advanced Technology Attachment, is ATA. PATA is an interface that connects hard drives, CD-ROM drives, and other drives. The first ATA interface is now commonly referred to as PATA, which is short for Parallel AT Attachment after the introduction of SATA.In PATA number of separate wires carry data from the motherboard to the		7

	drive, and vice versa, at the same time.The PATA cable is a two-inch-wide ribbon cable with two layers, each 20 pins wide for a total of 40 pins, terminated with a 40-pin connector. PATA drives also consume more power.It also means that PATA hard drives produce more heat than SATA drives. SATA cables have seven wires.The major difference between this format and PATA is that the information travels between the hard drive and motherboard as serial information, one bit after another. **SCSI** An acronym for Small Computer System Interface.Is a set of American National Standards Institute (ANSI) standard electronic interfaces.That allow personal computers to communicate with peripheral hardware such as disk drives, tape drives, CD-ROM drives, printers and scanners faster and more flexibly than previous parallel data transfer interfaces.In personal computing, SCSI interfaces have been replaced, for the most part, by Universal Serial Bus (USB). SCSI is a standard for parallel interfaces that transfers information at a rate of eight bits per second and faster, which is faster than the average parallel interface.		
(b)		Fig(4)+ Exp(4)	8

VI (a)	**RAID 0 – striping** **RAID 1 – mirroring** **RAID 2 – Redundancy through Hamming code** **RAID 3 - Byte level striping** **RAID 4 - Block level stripping** **RAID 5 - block-level striping with distributed Parity** **RAID 6 – striping with double parity**	List(2)+ Exp(6)	8
(b)	 **A laser beam is shone onto the surface of the disk** The light is scattered by the pits and reflected by the lands, these two variations encode the binary 0's and 1's. A light sensitive diode picks up the reflected laser light and converts the light to digital data.	3.5+3.5	7
VII (a)	**Expansion cards are printed circuit boards** that can be put into an **expansion slot of the motherboard**, and can expand and increase the PCs functionality. The number of expansion cards that can be added depends on the board and case.The main purpose of an expansion card is to offer features not offered by the board. **To install sound card :** Follow steps Find an empty PCI slot and insert the card. Screw down card then close machine. Turn on the PC. Your computer should detect new hardware and install using Plug and Play or install driver software by the help of CD or other disks. Follow the instructions **Removing old Sound Card** Turn off the PC and unplug it. Open the case. Touch the power supply to release the static electricity from your body (that can damage your PC). **Locate the old card. Unplug the speakers and everything plugged into the card.**		8

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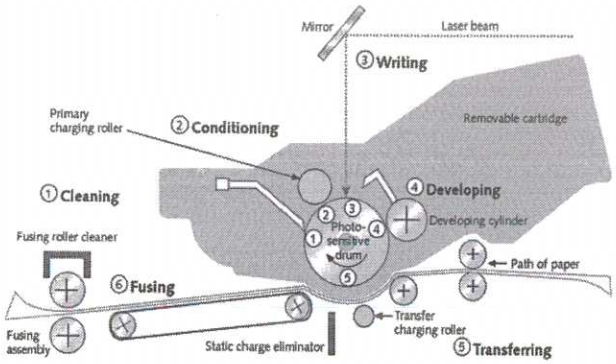
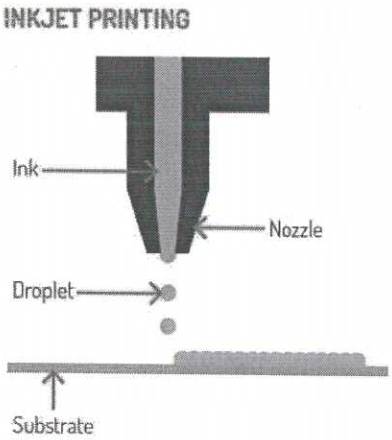
	Release any clip holding the able (be careful). Unscrew the card. Insert the new sound card in the same slot. Continue the newly card installation steps		
(b)	**Keyboard**. When you press a key, it presses a switch, completing the circuit and allowing a tiny amount of current to flow through. The mechanical action of the switch causes some vibration, called bounce, which the processor filters out. **Scanners** operate by shining light at the object or document being digitized and directing the reflected light (usually through a series of mirrors and lenses) onto a photosensitive element. In most **scanners**, the sensing medium is an electronic, light-sensing integrated circuit known as a charged coupled device (CCD).	3.5 + 3.5	7
VIII (a)	Inkjet Printer and Laser Printer **Laser printer**   	5+5	10

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(b)	Explain any one display devices (CRT , LCD, LED, PLASMA ….)		5
IX (a)	The parts that make up a laptop are completely different from those in desktop computers.The obvious major difference is size; laptops are space challenged.Another primary concern is heat. Restricted space means less airflow, meaning parts can heat up and overheat faster. laptop parts are physically much smaller and lighter. laptop parts are designed to consume less power and to shut themselves off when not being used,A most recent development in the laptop are the netbook computer. Netbook is an extremely small laptop computer that is lighter in weight.Users are attracted to netbooks because of their enhanced portability and affordability.Many users would find netbooks insufficient for mainstream usage.		8
(b)	Notebooks don't use standard desktop computer memory chips, because they're too big. There are now two common types of laptop memory package: **SODIMM and MicroDIMM.** **SODIMM** The most common memory for laptops is called a Small Outline DIMM (SODIMM). They're much smaller than standard DIMMs, measuring about 67 millimeters long and 32 millimeters tall. SODIMMs are available in a variety of configurations, including 32-bit (72-pin) and 64-bit (144-pin SDRAM, 200-pin DDR, 200-pin DDR2, and 204-pin DDR3) **MicroDIMM** MicroDIMM is the most recent laptop memory modules. The MicroDIMM is an extremely small RAM form factor. In fact, it is over 50 percent smaller than a SODIMM—only about 45.5mm long and 30mm wide.Another major difference is that the MicroDIMM does not have any notches on the bottom.	3.5+3.5	7
Xa	**Replacing a Laptop Hard Drive** 1. Turn off the computer. 2. Disconnect the computer and any peripherals from their power sources, and remove any installed batteries. 3. Locate the hard drive door and remove the screw holding it in place. 4. Lift the hard drive door until it clicks. 5. Slide the hard drive out to remove it. **Replacing Laptop Memory** 1. Turn off the computer. 2. Disconnect the computer and any peripherals from their power sources, and remove any installed batteries.		10

	3. Remove the screws holding the memory door in place. 4. Use your fingers to gently separate the plastic tabs holding the memory module in place. The module should pop up so you can grab it. 5. Align the notch in the new memory module to the one in the connector. 6. Insert the new memory module into the socket at a 45-degree angle. Once full contact is made, press the module down. It should click into place. 7. Replace the memory door and fasten the screws. **<u>Upgrading Laptop Video Cards</u>** 1.Turn off the computer. 2. Disconnect the computer and any peripherals from their power sources, and remove any installed batteries. 3. Remove the Mini PCI card and the optical drive. 4. Remove the hard drive, the hinge cover, the keyboard, the display assembly, and the palm rest. 5. Loosen the two captive screws holding the video card/thermal cooling assembly in place. 6. Lift up on the video card/thermal cooling assembly to remove it from the motherboard.		
(b)	Portable computers can use either of two power sources: batteries or adapted power from an AC or DC source. laptops utilize DC power to energize their internal components. AC power source needs to be rectified (converted) to DC. **Batteries** There are many different battery chemistries that come in various sizes and shapes. Nickel cadmium (NiCd), lithium-ion (Li-ion), and nickel-metal hydride (NiMH) have been the most popular chemistries for laptop batteries.A newer battery chemistry, lithium-polymer (Li-poly),Battery comparison is rate of self-discharge, or how fast an unused battery reduces its stored charge. Most notebook computers can also use AC power with a special **adapter** (called an AC adapter) that converts AC-power input to DC output.The adapter can be integrated into the notebook, but more often it's a separate "brick" with two cords, one that plugs into the back of the laptop and another that plugs into a wall outlet. Another power accessory that is often used is a DC adapter, which allows a user to plug the laptop into the power source inside a car or on an airplane.	2.5+2.5	5

	These adapters allow people who travel frequently to use their laptops while on the road. These units are often labeled with voltage-input ranges, such as 100 to 240V, and frequency ranges, such as 50 to 60Hz,		