Q.1

a.How to measure carbon footprint of the company?

ANS: There is no standard definition of carbon footprint but it is the impact of carbon dioxide output over the planet. In some organizations, carbon footprint means the sourcing (raw) material, manufacturing, distribution (transportation), use, disposal, all these CO_2 generation factors will be accumulated and calculated.

Steps to measure carbon footprint are:

    (i)   Define what is included in your carbon footprint.
    (ii)   Set your baseline.
    (iii)   Track, calculate and analyze your footprint.
    (iv)   Report your raises to stakeholders.

b. Explain objectives of STEP program.

Ans.

    (i)   Optimizing the life cycle of electrical and electronic equipment by improving the supply chain.
    (ii)   Closing material loops.
    (iii)   Reducing contamination.
    (iv)   Increase the utilization of resources and rescue the equipment.
    (v)   Increase public, scientific and business knowledge.
    (vi)   Develop clear policy recommendations.

c. Explain campaigns of Based Action Network.

Ans:

BAN is a non-profit Organization with a mission to champion global environmental health and justice. Focusing on electronic waste and old ships, BAN fulfill its mission using interrelated policy, market solutions, and public engagement strategies that create systemic change.BAN currently runs four campaigns focusing on decreasing the amount of toxins entering the

environment and protecting underdeveloped countries from serving as a toxic dump of the developed countries of the world.

These campaigns are:

(i) The e-Stewards Initiative: BAN created and manages e-Stewards, a certification standard for the best recycling. E-Stewards distinguish truly responsible recyclers from those who simply claim to be green.

(ii) Green ship recycling: BAN advocates for safe and clean recycling of old ships, such as the cargo ships that once transported us our goods or the retired US Navy vessels that protected the oceans.

(iii) Basel Advocacy: BAN continually advocates for just policies with their namesake, the United Nations 1989 Basel Convention. Executive Director Jim Puckett is the only person to have attended every conference meeting.

(iv) Investigative watchdog: BAN has a long and strong history of documenting and raising awareness of toxic trade – from being the first to expose the public to e-waste export, to their ongoing exposé work.

d. What is national computer recycling act?

Ans:

Computer recycling, electronic recycling or e-waste recycling is the disassembly and separation of components and raw materials of waste electronics. Although the procedures of re-use, donation and repair are not strictly recycling, these are other common sustainable ways to dispose of IT waste.In 2009, 38% of computers and a quarter of total electronic waste was recycled in the United States, 5% and 3% up from 3 years prior respectively.[2] Since its inception in the early 1990s, more and more devices are recycled worldwide due to increased awareness and investment. Electronic recycling occurs primarily in order to recover valuable rare earth metals and precious metals, which are in short supply, as well as plastics and metals. These are resold or used in new devices after purification, in effect creating a circular economy. Such processes involve specialised facilities and premises, but within the home or ordinary workplace, sound components of damaged or obsolete computers can often be reused, reducing replacement costs.Recycling is considered environmentally friendly because it prevents hazardous waste, including heavy metals and carcinogens, from entering the atmosphere, landfill or waterways. While electronics consist a small fraction of total waste generated, they are far more dangerous. There is stringent legislation designed to enforce and

encourage the sustainable disposal of appliances, the most notable being the Waste Electrical and Electronic Equipment Directive of the European Union and the United States National Computer Recycling Act.

e. What are WEEE directives?

Ans: The Waste Electrical and Electronic Equipment Directive (WEEE Directive) is the European Community Directive on waste electrical and electronic equipment (WEEE) whichbecame European Law in February 2003. The WEEE Directive sets collection, recycling and recovery targets for all types of electrical goods. The WEEE directive sets a total of 10 categories of WEEE[8] for reporting purposes.

- Large household appliances

- Small household appliances

- IT and telecommunications equipment

- Consumer equipment

- Lighting equipment

- Electrical and electronic tools

- Toys, leisure, and sports equipment

- Medical devices

- Monitoring and control instruments

- Automatic dispensers

They have modeled their own legislation. The WEEE directive places the responsibility of disposal of electronic and electrical equipment on the manufacturers. The manufacturer has to dispose of, recycle or refurbish the equipment in an ecological manner. The only country to meet the WEEE directive law was Cyprus.

f. How does china ROHS work?

Ans.Although China takes its lumps for being a destination of much of the world's e-waste, the nation is working to get e-waste legislation in place. The

Chinese regulation is normally referred to as China RoHS. Though it is similar to the European Union's RoHS, it does take a different approach. The EU's RoHS lists specific categories of products. Specific products are automatically included in those categories unless specifically excluded. China RoHS, however, contains a list of included products. That list is called the Catalog.

Q.2

a.What is data De-duplicate?

ANS: Data de-duplication is a technique used to reduce the amount of storage space an organization needs to save its data. In most organizations, the storage systems contain duplicate copies of many pieces of data. De-duplication eliminates the extra copies of data by saving just one copy of the data and replacing the other copies with pointers that lead back to the original copy. Companies frequently use de-duplication in backup and disaster recovery applications, but it can be used to free up space in primary storage as well.

Benefits of Data De-duplication are:

(i) The primary benefit of data de-duplication is that it reduces the amount of disk or tape that organizations need to buy, which in turn reduces costs.

(ii) While de-duplication can be applied to data stored on tape, the relatively high costs of disk storage make de-duplication a popular option for disk-based systems.

(iv) Eliminating extra copies of data saves money not only on direct disk hardware costs but also on electricity, cooling, maintenance, and floor space etc.

(v) De-duplication can also reduce the amount of network bandwidth required for backup processes.

(vi) It speeds up the backup and recovery process.

b.What is low power computer?

ANS:Electricity consumption is a factor that is very important when companies design a laptop or tablet because it determines the duration for which it can run on a battery (without connecting the power plug). Each and every component that is put in a laptop or tablet is energy efficient. Laptops also have various other power management features. 70-80% of power consumption in a laptop is by CPU, and the rest of the components consume very little electricity. Laptops typically consume 20-50 Watts of electricity that can be trimmed down in power saver modes. Desktops on the other hand use about 60-200 Watts of electricity. A lot of it depends on the type of screen. A CRT (Cathode Ray Tube) screen consumes more than LCD (Liquid Crystal Display) screens. LCD screens can save up to 75% of electricity over a CRT screen. A desktop also requires a UPS (Uninterruptible Power Supply) to keep it running during power loses which can eat a significant amount of electricity.

c. Explain MAID?

Ans.MAID (massive array of idle disks) is a storage technology in which only those disk drives in active use are spinning at any given time. MAID reduces power consumption and prolongs the lives of the drives. A MAID, which can have hundreds or even thousands of individual drives, offers mass storage at a cost per terabyte roughly equivalent to that of tape. MAIDtechnology is offered as an option to high-volume tape libraries. A MAID is usually constructed with low-cost Serial Advanced Technology Attachment (SATA) drives, which have a shorter mean time between failure (MTBF) ratings than more expensive drives. When the MAID is implemented, every drive is periodically tested. If a driver shows signs of failure, data is transferred to other drives. A MAID has far greater storage density than a RAID (redundant array of independent disks) system of equal cost. In addition to reducing power consumption, the cooling requirements of MAID are also reduced.
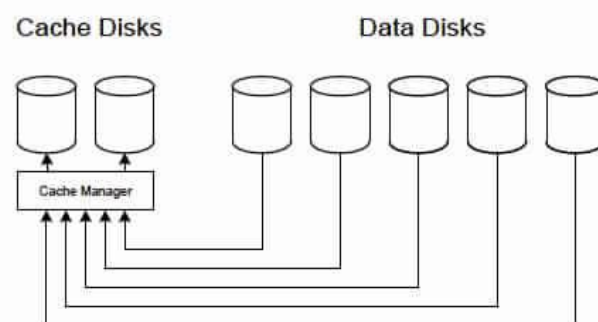

Figure 8: MAID System Structure

d.Explain various way to reduce cooling cost?

Ans. Here are three ways you can reduce costs associated with cooling data centers.

1) Ditch Central HVAC Systems for Portable Cooling

In some cases, the central AC system can be used to adequately maintain server room or office data center temperatures. But, in most cases, this results in a lot of wasted air and energy. There are several key reasons data centers are more cost effective when they rely on separate portable cooling equipment.

2) Stay on Top of Temperature Control

Overheating often leads to permanent damages or costly repairs. That's why most data centers are equipped with sensors that detect high heat levels, causing the system to shut down before it overheats. System shut downs may protect equipment from breaking but they still put a wrench in business. They can even cause loss of sensitive or crucial data. Not to mention, network routers that take care of some of the most critical internal and external data transmissions have the highest sensitivity to heat.

Prevent overheating as best as you can by putting additional sensors in place that alert you to high temperatures *before* they get too high.

3) Reconsider Split-System AC

If your office data center resides in a leased space, the lease agreement may detail regulations on split precision-cooling or mini-split systems. These methods require cutting into the roof or outer wall in order to run copper connecting pipes through the space. The installation process is extensive, hence why they are written out of many leases.

4) Adopt new cooling technology

It's critical that data centers utilize the most efficient cooling methods available to drive down PUE [power usage effectiveness. As a result, we are seeing a shift from traditional cooling methods to free-cooling methods, such as direct evaporative cooling (DEC) and air-cooled chillers with free-cooling.

5) Direct liquid Cooling technique

Direct liquid cooling generally involves a relatively short ROI [return on investment] and a reduced total cost of ownership compared to traditional ways of cooling a data center; this, of course, depends on the workloads and density of the data center and the existing infrastructure. It's incredibly silent, as opposed to air cooling, which requires loud centrifugal fans, making the data center a more comfortable environment to work in; it's the most effective way to cool a data center because it can be used for server densities of hundreds of kW for a 42U server, removing multiple mediums and targeting directly to the heat source; and it's the most efficient way to cool a data center.

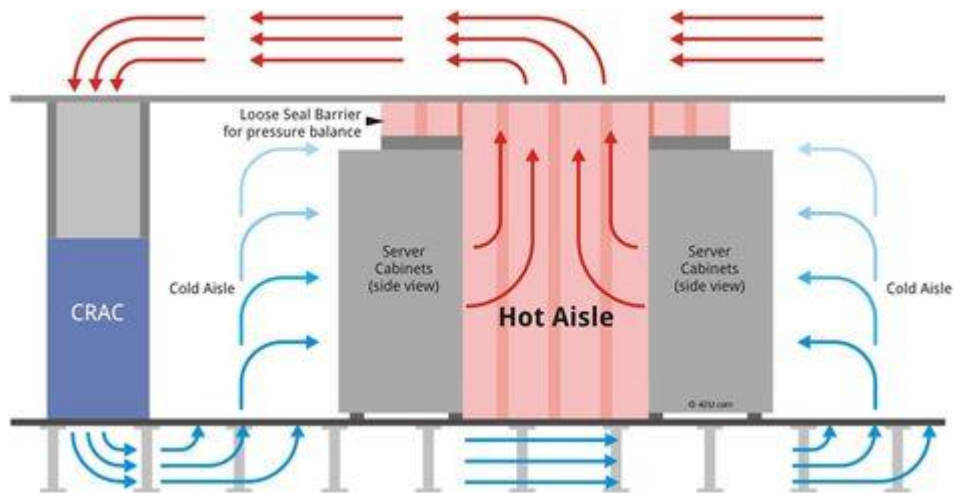### e. Explain centralised control data centre design.

Ans: When designing your cooling plan, it's best to employ a custom centralized air-handling system. This sort of system offers several benefits over the prevalent multiple-distributedunit system, including the following: • Better efficiency. • Can use surplus and redundant capacity. • Units can work in conjunction with each other, rather than fighting against one another. • Uses fluid-cooled chiller plants, which are much more efficient than water- and aircooled datacenters. • Less maintenance is required.
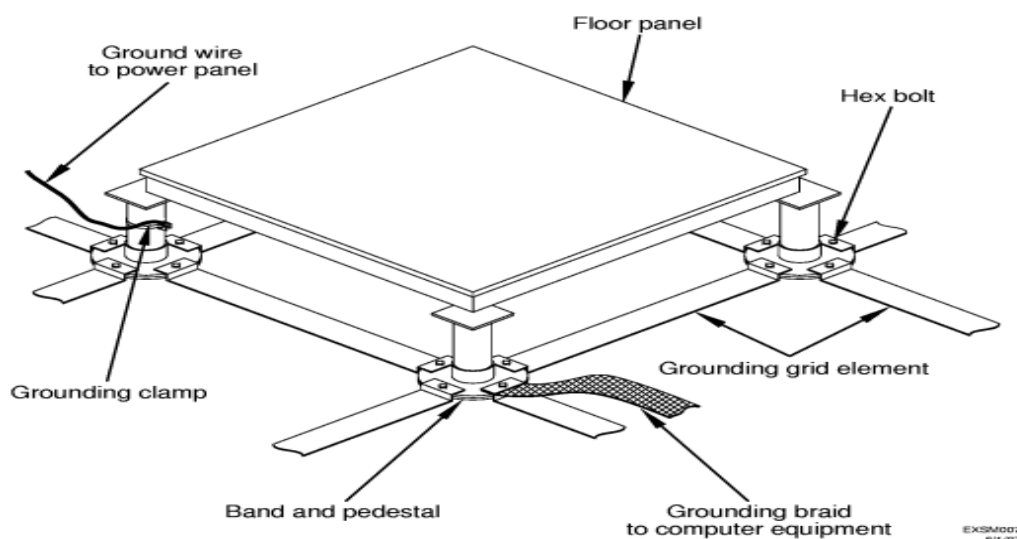
f. Explain Hot and Cold Aisle.

Ans. In a cold aisle containment approach, the data center installs end of row doors aisle ceilings or overhead vertical wall system to contain the conditioned air that cooling systems send into the cold aisles. This ensures that only that air flows into the air intakes of the rack-mounted IT devices. The data centre contains the cold aisle to keep the cold air in and the hot air out.

In a hot aisle containment, the hot is contained so that the precision air conditioning unit only receive hot air from the aisles. Again, the data centre contains the hot aisles to keep the hot air in that aisle and the cold air out.

Raised floor in a data centre is an elevated floor that is build 2 inches to 4 feet above a concrete floor. It creates a space that can be used for cooling electrical and mechanical services. In data centers, raised floors are also used as a way of distributing cold Air. By using a raised floor, facilities not only reduce the amount of air needed to cool equipment, they also require less energy and improve temperature distribution across all the cabinets.
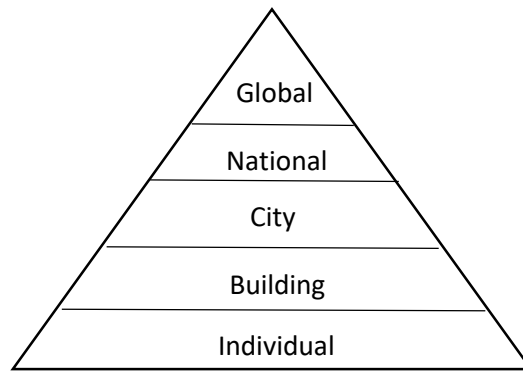

Q.3

a.Explain concept "Global Impact of Local Action".

Ans: At the bottom of the pyramid is Individual and the top represents the global community. The decisions made at one has the influence on the next level.

1. Global Actions: The decisions at both ends of the countries on the globe are concerned with the increasing CO2 concentration on the globe. Many organizations and NGO's are working together to get rid of CO2 impact on the globe.E.g., UN and international organizations, international NGO's etc.

2. National policies: National policies are prepared to reduce CO2 levels. They are forming rules and regulations for the betterment of the Globe. E.g., Swachh Bharat Abhiyan, plastic ban, thermocol ban are the national policies in India.

3. City:The local government has various program to deal with CO2 level they are in coordination with National level various campaign sweet shows and lecture seminar are conducted to create awareness about CO2 emission impact on the globe. E.g., local government organizations like BMC etc.

4. Building: Building is the place where real action takes place. here many people talk about the design, technology, materials and various issues related to CO2.

5. Individual: Individual actions are daily activities which have an indirect impact on the globe. Hence actions such as minimising use of water, reducing electricity use, recycling waste products use public transport carpooling go for healthy lifestyle. These actions can reduce emission of CO2.

b. What is cooperative buying?

ANS :Cooperative purchasing, also referred to as cooperative procurement or co-op contracts, allow two or more government entities to combine their purchasing power and buy through competitively solicited contracts. Co-op contracts can be used to purchase goods and services. Participation in cooperative purchasing contracts is not limited to federal agencies: state, cities, counties, school districts, higher education institutions, non-profits (and more) can all take advantage of the greater buying power.

Benefits of cooperative buying:

Leveraging the benefits of more than one partner in government contracting certainly has its advantages. Cooperative purchasing agreements:

- Lower prices by aggregating purchasing power [buying in higher volume = price savings]
- Lower administrative time and expenses because it reduces the time spent preparing and soliciting a bid [increase operating efficiencies]
- Generally they are free to join and free to use
- Free up resources for "mission critical" processes by driving down total costs
- Obtain more advantageous terms and conditions

c.What is telecommuting?

Ans. Telecommunication is a work arrangement in which the employee works outside the office. T.C is also called as work from home. In this process, the worker might be interested but the management may hesitate o implement work from home process. Sun microsystem operate their own TC program called as I work where the workers work from home. They have flexible work centres when there is a need, they nee to report at office. The travelling time is reduced by bicycling. The company saves money by saving electricity, less payment and the office place.

d. What is outsourcing?

Ans: When organization needs additional computers and staff while growing business. It is at the cost of money matter. To overcome or lessen the burden organization can go for outsourcing. It can hire the company which already has

the staff and equipment in place while outsourcing the following things need to be considered:

    (i)   Plan in advance for the project.
    (ii)   Find outsourcing service providers.
    (iii)   Check the project requirement and project.
    (iv)   Find feasibility of project in the terms of time money and efforts.

e.Explain going paperless in a organization.

Ans: Going paperless for organisation saves money, time and increases efficiency and effectiveness in work. planning for paperless organisation can be executed in the following steps:

- Implement paperless document storage.
- Transition to paperless meetings.
- Use electric communication.
- Scan documents.
- Switch to digital receipts.
- Invest in energy efficient office equipment.
- Use e-signatures.

f. Explain concept of EDI.

Ans: EDI system is used by organization for managing their supply chain with vendors and other companies. EDI is a system which allows electronic exchange of business documents such as purchase order invoice ship notice and billing etc.

Advantages:

    (i)   EDI is online transaction it saves significant time.
    (ii)   EDI reduces data entry errors, minimizes labour cost and improves work efficiency.
    (iii)   EDI provides a secure environment.
    (iv)   EDI is more efficient than conventional methods.
    (v)   EDI also speeds up the business proposals.

Obstacles in implementing EDI:

    (i)   Cost time and money in implementing initial setup are the significant barriers to EDI.

(ii) Existing business, if build on paper handling, may require inhouse changes.

(iii) The inhouse automation will need the staff training as well.

(iv) Processing of existing documentation has to be done in proper manner.

Q.4

a. **Explain ill health effect of e waste**.

ANS: Improper handling of e-waste is detrimental to the environment and mankind. Since this waste is nothing but a combination of plastics and toxic chemicals, these get released into the environment. Pollutants such as dioxins and furans from polyvinyl chloride, lead, beryllium, cadmium, mercury, etc. get into our environment and cause the following health hazards:

- Reproductive issues
- Developmental problems
- Damage to the immune system
- Interference with regulatory hormones
- Damage to the nervous system
- Kidney damage
- Hamper's brain development in children
- May lead to lung cancer
- Chronic beryllium disease
- Skin ailments
- Cadmium accumulations on liver and kidney
- Asthmatic bronchitis
- DNA damage
- Muscle weakness
- Endocrine system disruption

b.Explain refurbishing concept?

Ans:

Process of Refurbishing:

(i)   A Refurbisher receives discarded parts and then extracts usable parts from computers that are not repairable and then fixes the one that can be repaired.

(ii)   The process can be done with 2-3 discarded machines with which one workable computer can be designed

(iii) Computers can be refurbished according to specific client specification.

Non-commercial refurbishing: Almost more than 70% of non-commercial computer reused is sent to school. This is a non-profit deal where computer training is involved, the parts are sent to school. The "Compumentor" is an organization which helps to provide PCs and other technologies at low income.

Commercial refurbishing: The old computers can be sold online for individual or the organization. IBM and HP financial services go for commercial refurbishing. The computers are brought into a location. Dell company performs refurbished operations and the computers are again sold to the required industry or individual.

c.Explain different way to clean a hard drive.

Ans: Only formatting is not sufficient to clean the harddrive. The information can be retrieved from harddrive even after format. The quick format just writes to a portion of the disk but most of the data will be still there. There are various methods for completely erasing hard drive data:

b. Deleting data: in deleting data process, the file is deleted. Using this method if data overwrites the area the new file can reside.

c. Overwriting: the removal of old data is also possible with overwriting the new data. In this method, the misalignment of read or write heads of the disk may occur.

d. Degaussing: the powerful magnetic force can erase data on magnetic disk. this process uses the machine which produces strong magnetic fields. And destroys the information stored on the hard drive. This process deletes the data very fast but it destroys other components of the hard drive as well. It is very important to be cautious while using degaussing machine for

wiping data. This process is generally conducted by highly professional people.

e. Mechanical shredding: In this process, the old hard drives are kept in the shredder machine and are broken into smaller pieces. Here all confidential information will be erased out but one cannot get it back after shredding a hard drive. The companies can go for secure erase where secure erase software will clean the hard drive and make more space for data storage. But the organization needs t bear its cost.

d.Explain advantages of thin client.

Ans:

1. **Lower administration costs:** As managed mainly at the server side and less chances for hardware failure, thin clients pose very less administrative cost. Also, as the entire system is managed centrally, there's less chance of virus or other malware infection.

2. **Security:** As no data is actually stored on the thin client, the chance for physical data theft is drastically reduced.

3. **Lower hardware costs:** Thin clients are less expensive because they do not contain disk drives, application memory, and high-power processors. They also have longer lives.

4. **Efficiency:** With a thin client, memory can be shared, so CPU rarely gets idle. If multiple users are using the same application, it only needs to be loaded into the server's RAM once.

5. **Lower energy consumption:** Thin clients use a lot less energy than fat clients. This reduces the amount of energy consumed, which equates to less heat generation, thus reducing the price of air conditioning.

6. **Easy hardware failure management:** It is easy to replace the thin clients in case of failure. Here, only the unit has to be removed. There is no need to try and recover files and transfer them from the old, broken machine to a replacement, as there is no data present.

7. **Hostile environments:** Thin clients don't have moving parts, so they can be used in dusty environments and other harsh locales, such as manufacturing floors. Also there is no worry over fan's congestion and overheating of the computer.

8. **Ease of upgrade:** If our system needs more computing power, it's easier to add another blade server to increase system resources to the level we need rather than having to upgrade individual clients. This results in less downtime, and we don't have to worry about disposal of replaced equipment.

9. **Less noise:** Because there are no fans in the thin clients, no noise is generated.

10. **Less disposed equipment:** Thin clients have longer life, so they aren't disposed of as often. Also, because there are no hard drives or DVD-ROM drives, there are fewer components to discard when they reach the end of life.

e. Explain benefit of Blade server.

Ans: Benefits of blade server are:

f. <u>Less space needed</u>: Blades take up 35-45% less space than tower or rack-mounted servers.

g. <u>Reduce Power Consumption</u>: By merging power supplies into blade chassis, we reduce the power supplies needed and we benefit from an overall reduction of power use.

h. <u>Lower management cost</u>: After merging our servers, deployment, management, and administration are simplified and improved. It results I cost savings and less headache for IT staff.

i. <u>Simplified cabling</u>: Blade servers reduce cabling requirements by 70%. Fewer cables enable better airflow, which means lower cooling costs.

f. Explain factors to be considered for remote desktop use.

ANS: You can also make life easier for workers who are on the road or occasionally have to work from home or a remote site. They can access their office computers, if they're using
Windows, via Remote Desktop.But it isn't just out-of-the-office workers who can benefit from Remote Desktop—people inside your organization can also use it. It can be used for the following purposes:
• To power thin clients If you buy thin clients, Remote Desktop can be used to
connect your thin clients to the server.
• To extend the life of existing machines Rather than getting rid of old machines,
you can turn them into thin clients and run applications from the server.

Q.5
a. **Explain objectives of SMART goals.**

Ans: It is mechanism that helps us set and achieve certain goals. SMART is an acronym for Specific Measurable Attainable Realistic Timely.

b. <u>Specific</u>: A goal should be particular and put in terms where people can relate to it. For E.g. A goal of getting A+ Grade in 3 months is specific.
c. <u>Measurable</u>: Develop concrete criteria for measuring progress towards a goal.
d. <u>Attainable</u>: Once goals are identified think of ways and opportunities to achieve them. For E.g. Consistent practice will make the goal attainable.
e. <u>Realistic</u>: Set high goals but be sure that they can come true in reality. For E.g. In 3 months, it is possible to get good grades but not in 3 days.
f. <u>Timely</u>: We have to have time bound limit for achieving goal. It could be specific date, month or year. For E.g. here, the goal has time period of 3 months.

b.**Explain role of chief green officer.**

ANS: It is also known as Chief Environmental Commitment Officer (CECO). Chief Green Officer (CGO) has a job role that involves implementing andsupervising organization's green initiatives.. These initiatives are implemented to minimize the organization's carbon. footprint and protect the environment.
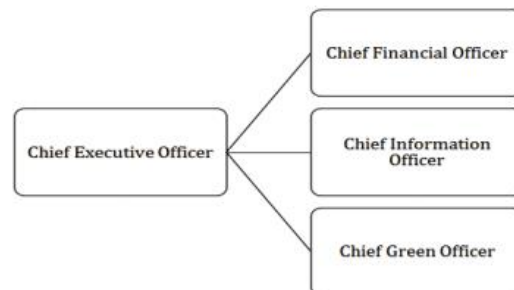
CGO is going to be responsible for following things:

1. Finding new and innovative ways to reduce the carbon footprint of the organization.

2. Getting diverse stakeholders on board and engaging them in green programs.

3. Discovering new revenue opportunities through corporate and environmental sustainability initiatives.

c.Explain characteristic of SAAS.
ANS:
Few applications don't even need a software installed on our servers. This is another way that equipment can be eliminated from our company. It is referred as SaaS. Characteristics The SaaS is a model where a software vendor offers its software for use over the Internet. So we don't need any equipment to run it, we can access all the services of that software over internet. For software also we don't need to pay for, but for use we have to pay. Benefit of SaaS is that we don't have to worry about buying upgrades to the application, performing upgrades, and troubleshooting any problems. Any upgrades are performed by the SaaS provider. The SaaS software includes the following characteristics: • Network-based access to, and management of, commercially available software. • Activities that are managed from central locations rather than at each customer's site,

enabling customers to access applications remotely via the Web. • Application delivery that typically is closer to a one-to-many model, including architecture, pricing, partnering, and management characteristics. • Centralized feature updating, which obviates the need for downloadable patches and upgrades. The SaaS applications are priced on a per-user basis. Additional fees can be added for extra bandwidth and storage.

d.Explain Just In Time(JIT) buying technique

Ans: JIT concept can be used by organizations which is beneficial in certain areas where:

(i)   It reduces the total number of products in our warehouse.
(ii)   Organization can buy or purchase equipment's only when necessary.
(iii)   The equipment unnecessarily purchased will occupy space.
(iv)   Unnecessary purchase will also lead to monetary deficient.
(v)   The Dell computers are built when there are sufficient orders by the consumer and vendors. They don't have machines waiting to be purchased or lying without any use.
(vi)   So, JIT buying has huge benefits which saves money and the current trend product is available.

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e.Explain CRM components.

Ans: Customer Relationship Management (CRM) is a philosophy of coordinating among
all the players in an organization so that the customer is served well and has the best
experience possible being your customer. To that end, several application packages help
streamline the process.
The technological components of your CRM system include the following:
• Database A database for customer information and their interactions with the

company, which includes order information, support information, requests,

complaints, and survey responses.

• Customer Intelligence You need a system for translating customer needs and

profitability projections into plans that can be segmented for different types of

customers. Then, you need to be able to track whether those plans are followed and

whether desired outcomes have been achieved.

• Business Modeling This piece analyzes your customer relationship strategy along

with the goals. In the end, this will tell you whether you are meeting your goals.

• Learning and Competency Management Systems This component helps you get

closer to the results you desire and the goals you've set. Complex systems need time

to be implemented and tweaked, and this component can help you analyze your

processes.

• Analytics This piece is used to analyze customer relationship policies and

activities, using such technologies as voice recognition and statistical analysis.

• Collaboration This component allows your customers to interact with your

business and their fellow customers.

Each of these components can be implemented one by one over time, but the end goal is for

them to be configured to benefit one another. SAP (Link 13-2) and Oracle (Link 13-3)—among

others—offer CRM solutions.

f.Explain various business intelligence tools.

ANS: In order to measure and track your data, you can use business intelligence (BI) tools, such as

the following:

• Digital dashboards These are also known as business intelligence dashboards,
enterprise dashboards, or executive dashboards. They give you a visual summary of the
data you want to track as well as an at-a-glance understanding of business conditions.

• Online Analytical Processing (OLAP) This feature allows some information
systems to analyze data from different perspectives and give you the results.

Reporting software These applications generate aggregated views of data you are
tracking. They can compare different times so you can get a good understanding of
your overall conditions.

• Data mining This allows you to go back through your data and search for a specific
piece of information. For instance, if you've decided to track a metric you hadn't
previously thought to track, with data mining you can go back through existing data
and make your new measurements

Q.1

a. **What are the step involves for measuring of carbon footprint?**

Ans) A carbon footprint is defined as: The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO_2). In few organizations, carbon footprint might mean that everything is tallied—sourcing materials, manufacturing, distribution, use, disposal, and so forth. Measuring Measuring of carbon footprint is time consuming job. Following steps can be used for it.

Step 1. Define the boundary for your carbon footprint We need to monitor the carbon footprint process year by year, so it is very important to have some rules to follow about scope of work to be done. Our primary objective is to reduce the emission of carbon, if we fail to define the carbon footprint boundary can inhibit comparisons against benchmarks and could also undermine meaningful monitoring of performance. There are three types of boundaries: Type 1: Operational control: Using this approach every operation of our organization/company is captured in the carbon footprint. This also includes supply chain if an organization has sufficient operational control over suppliers. Type 2: Financial control: In this approach all financial elements are included. Often this excludes elements which our company may operate but not financially control and therefore using this approach can result in a smaller carbon footprint. Type 3: Equity control: This approach includes all elements that our company owns. If our company has part ownership then the proportion ownership is used to calculate the relevant carbon footprint attributable to that company.

  Decide which emissions will be included under scope: Scope refers to the emission types captured in a carbon footprint. The scope of an organization's carbon footprint also breaks down into three components. Scope 1 emissions: These are direct emissions from assets that are either owned by our company (i.e. fleet vehicle emissions from the consumption of fuel) or emissions produced through an on-site activity (i.e. emissions from the burning of natural gas in a company's boiler). Scope 2 emissions: Scope 2 covers all indirect emissions or more specifically emissions derived from the production of

purchased electricity. Here company hasn't actually produced the emissions associated with electricity generation but due to the consumption of electricity to power lights, equipment etc. we can say that our organization is indirectly responsible for these emissions. Scope 3 emissions: Scope 3 covers all other indirect emissions which are not as a result of the consumption of purchased electricity. This includes a wide array of emission sources including waste, consumables, staff commute, supply chain emissions, water use etc.

Step 3. Define your carbon footprint period A carbon footprint is typically measured across an annual period. When choosing our period for measurement it is best to think of other reporting cycles which can be used as the set time-frame.

Step 4. Use a practical approach to collect annual data Once we have defined our boundary and the type of emissions we are going to capture, we'll then need to collect data on all elements that we are going to measure carbon emissions for (i.e. electricity and gas usage, vehicle mileage, waste volume etc.)

b. **How hardware deployments can affect the environment?**

Ans) There are a number of ways that specific hardware and hardware deployments can affect the environment. We can reduce cost for hardware is to simply buy less equipment. Taking the Steps, Gaining the Rewards: The Nashville's Vanderbilt University and the state of Oregon have begun datacenter virtualization projects and expect to save millions of dollars by the time the projects are finished. Vanderbilt's Information Technology Services organization is using server virtualization to reduce its energy use to save money and less damage to the environment. Use What You Have: Every time before purchasing new equipment, once again go through our old inventory and old dump electronic elements. If we found something that can be reused and renovated with energy efficiency, first do that. We can take an older computer and turn it into a thin client for the processing and storage duties are conducted at the server, as the client just needs enough power to be able to display what is going on at the server. A thin client uses 15 watts of energy instead of the 150 watts that workstations use on an average. If we are doing so our energy bill will be ten times less than what it is now.

c. **Write a note on Equipment disposal.**

Ans) 1.When computers and other devices become obsolete, they need to be discarded. If these devices are properly disposed of, many useful materials are extracted from those devices which can then be used as raw material for other devices.

2. On the other hand, if not properly disposed of, they can be major sources of toxins or hazardous substances. But the main problem is there is no formal , legal, official process in place for proper disposal of electronics in many of the places including the United States. But Europe and Japan have policies for handling end-of-life products.

d. What are the steps taken by JAPAN for measuring their own e-waste problem?
Ans) Japanese e-waste management comes with a law, it roles and responsibilities of the relevant stakeholders.

Stakeholders are:

(i) Manufacturers are responsible for taking back recycling the appliances that they have sold.

(ii) Retailers are responsible for taking back used appliances and recycling them back to manufacturers again. They have to display the cost for collecting and transporting.

(iii) Consumers are responsible for properly discharging used appliances and they have to bear the cost for recycling.

(iv) The municipalities are responsible for delivering and collecting home appliances to the recycling units.

e. What are the Basel Action Network functions?

Ans) The BAN is a charitable non-government organization working to combat the export of toxic waste from technology and other products from industrialized societies to developing countries. The main functions of the BAN include:

   (i)   It provides information on the waste trade for journalists, academics and the general public by using e-mail newsletter and electronics action alerts.

(ii)   It also provides international policy advocacy. Ban works with the United Nations Organization of Economic Cooperation (UNEP), Chemicals program and governing council. It also has produced National Legislation on toxic waste trade for developing countries.

(iii)   Ban conducts field research and investigation in developing countries and provides photographic and video documentation of e-waste trade.

(iv)   Ban participates with NGO's around the world in campaigns to counter toxic waste.

(v)   It promotes safe, clean and just recycling of old cargo ships and electronics around the world.

f. Explain any five e-waste laws of states in US.

Ans) As e-waste is an international concern, United Nations has taken a lead and implemented its solving the E-waste Problem (StEP) program. StEP is not supposed to misunderstand as a strict organization which monitors office buildings where CRTs are being disposed of unsafely. Instead StEP is a program where companies, governmental organizations, academic institutions, nongovernmental organizations (NGOs), and nonprofit organizations around the world can participate. To be involved with StEP, an organization has to commit to active and productive involvement in the StEP program

1. Research and piloting: Overcoming the e-waste problem requires knowledge, leadership and action. By conducting and sharing scientific research, Step is helping to shape effective policy-making. Research is also key to reducing or replacing resources used in manufacturing. By fostering the generation of problem-solving ideas, Step can support their implementation and analyze their effect.

2. Strategy and goal-setting: While the overall goal is the elimination of e-waste as a problem, there are realities to be embraced along the way. Targets, goals and strategies must take into account the varying circumstances of different jurisdictions and markets. A key strategic goal is to empower pro-activity in the marketplace through expanded membership and to secure a robust funding base to support activity.

3. Training and development: Step's global overview of e-waste issues makes it the obvious provider of training on e-waste issues. The Step EWaste Academy brings together diverse groups of participants and trains them on key

issues. A syllabus is being defined with the ultimate goal of expanding the Step E-Waste Academy.

 4. Communication and branding: Brand communication and awareness is vital, both within the membership and throughout the industry as a whole. One of Step's priorities is to ensure that members, prospective members and legislators are all made aware of the nature and scale of the problem, its development opportunities and how Step is contributing to solving the e-waste problem
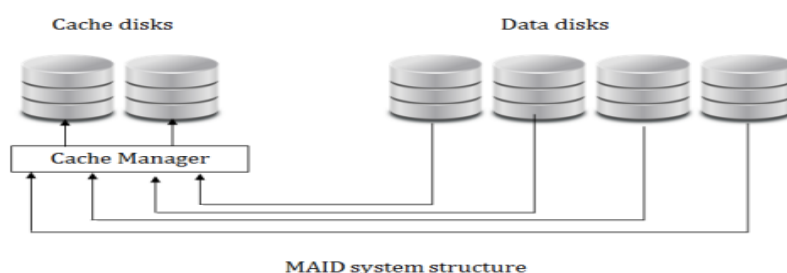
Q.2
a. **Write a note on Data De-duplication and Virtualisation.**

Ans) Data de-duplication is a technique used to reduce the amount of storage space an organization needs to save its data. In most organizations, the storage systems contain duplicate copies of many pieces of data. De-duplication eliminates the extra copies of data by saving just one copy of the data and replacing the other copies with pointers that lead back to the original copy. Companies frequently use de-duplication in backup and disaster recovery applications, but it can be used to free up space in primary storage as well.
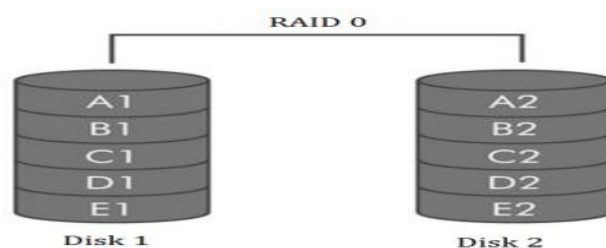
Virtualization is one of the hardware reducing, cost saving and energy saving technology that is rapidly transforming the IT landscape and fundamentally changing the way that people compute. On a server or a desktop PC, it allows multiple operating systems and multiple applications to run on a single computer. The software that makes this possible is known as a hypervisor.

b. Explain MAID and RAID.
Ans) MAID: A massive array of idle disks (MAID) is a system that uses hundreds or thousands of hard drives for near line data storage

MAID system structure

MAID is designed for write once, read occasionally (WORO) applications. The drives in this disk only spin whenever accessed. As small amount of the data is being accessed, these disks can be powered as needed, thus reducing the power used to run them as well as reducing the generation of heat, which in turn reduces cooling costs. MAID has increased storage density and is much less expensive, thus saving power and the need for cooling. MAID solution are somewhat slow, its data access can take a few milliseconds up to 10 seconds. This system allows a dense packaging of drives, and typically only 25 percent of the disks are spinning at any given time. Use of SATA drives made architecture of MAID more popular because SATA disk are made to be spin as per need. So it is always a good solution to use MAID architecture for storage for achieving energy efficiency. Power-managed RAID: The RAID (redundant array of inexpensive disks) is majorly known for its security features. A typical RAID consumes more power. To deal with this issue, a new form of RAID has been introduced. A Power-managed RAID provides parity protection, but with only some of the RAID disks actually turned on. When data is written, only the parity and associated data drives are powered up. When data is read, only the disk being read needs to be powered up.

Here Non-disruptive and sequential read/writes are accomplished by staging the data to an always-spinning drive, while the next drive is being powered up. The result is that your organization can have hundreds of terabytes in storage in a single footprint which in turns results in power saving.

c. What is polling? Give example.
Ans) Polling: It is the process of automatically checking of, if a given action has been taken draws power from idling computers, because it automatically wakes the computer up to check for a given event. Every time an application polls for something, the CPU wakes from an idle state and consumes power. Polling is the process where the computer or controlling device waits for an external device to check for its readiness or state, often with low-level

hardware. For example, when a printer is connected via a parallel port, the computer waits until the printer has received the next character. These processes can be as minute as only reading one bit. This is sometimes used synonymously with busy-wait polling. In this situation, when an I/O operation is required, the computer does nothing other than check the status of the I/O device until it is ready, at which point the device is accessed. In other words, the computer waits until the device is ready. Polling also refers to the situation where a device is repeatedly checked for readiness, and if it is not, the computer returns to a different task. Although not as wasteful of CPU cycles as busy waiting, this is generally not as efficient as the alternative to polling, interrupt-driven I/O. For example 10 polling actions that occur within 1 second. Schedule them so that they run immediately after another, rather than at various times during that period. By grouping them together, the computer only has to come out of an idle state once, rather than multiple times.

d. List and explain the issues regarding power consumption and cooling cost.

Ans) By the studies it is proven that in majority of cases cooling consumes more power than for use in processing in IT industries (Almost 63 percent more). So it should not be overlooked. Event it necessary, we must figure out how much exactly we need to spend on cooling.

Power Cost

We need to know how the cost of power is computed. Electricity is paid for per kilowatt- hour (kWh) uses. This is a measure of the hourly consumption of electrical power.

Causes of Cost

Cooling is a major component of power consumption as well as of IT budget. There are many issues regarding power consumption and cooling costs as follows.

• As more servers and storage is used, it increases power consumption.

• As computing is done on large scale, larger amount of heat is produced in the
server racks.

• There is irregularity of heat load in the datacenter causes by poor planning for heat
management.

• Increasing power costs.

• A tendency to cooling datacentres than needed.

Calculating Cooling Needs

Almost every device in server room generates heat including lighting. Also the number of persons working in server room may turn to increase the heat in room. These sources of heat contribute to the heat load of the server room.

Room Size

The complete room requires cooling. To calculate the cooling needs of the room, use this formula:

Room Area BTU = Length (meters(m)) × Width (m) × 337

Windows

Generally, server rooms don't have any windows. If we don't have windows then following formula is not used. But in case of having windows following formula can be used to determine which is most applicable to your datacentre:

South Window BTU = South Facing Window Length (m) × Width (m) × 870

North Window BTU = North Facing Window Length (m) × Width (m) × 165 If there are no blinds on the windows, multiply the results by 1.5.

People in the Room
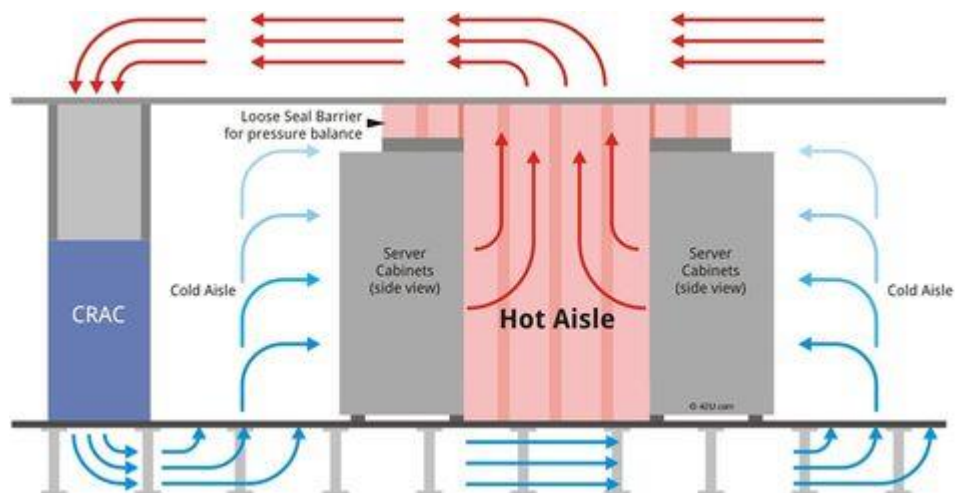
If you have permanent staff working in server room, the heat load goes up about 400 BTU per person. Here's the formula:

Total Occupant BTU = Number of occupants × 400

e. Explain Hot Aisle (path)/Cold Aisle and Raised Floors.

Ans) In a cold aisle containment approach, the data center installs end of row doors aisle ceilings or overhead vertical wall system to contain the conditioned air that cooling systems send into the cold aisles. This ensures that only that air flows into the air intakes of the rack-mounted IT devices. The data centre contains the cold aisle to keep the cold air in and the hot air out.

In a hot aisle containment, the hot is contained so that the precision air conditioning unit only receive hot air from the aisles. Again, the data centre contains the hot aisles to keep the hot air in that aisle and the cold air out.

Raised floor in a data centre is an elevated floor that is build 2 inches to 4 feet above a concrete floor. It creates a space that can be used for cooling electrical and mechanical services. In data centers, raised floors are also used as a way of distributing cold Air. By using a raised floor, facilities not only reduce the amount of air needed to cool equipment, they also require less energy and improve temperature distribution across all the cabinets.

f. List and explain data centres design and decision making issues.

Ans) Datacentre Design

The cooling solutions for the datacentres can be optimized as per the design of the datacentre. We can reduce the amount of cooling needed just by selecting proper designing of our datacentre and deploying cooling solutions using proper ways.

Centralized Control

The custom centralized air-handling system is the best solution for cooling. This system has several advantages over the multiple distributed unit system, as listed below.

- Better efficiency.
- Can use surplus and redundant capacity.
- Unit's works in combination with each other, instead fighting against each other.
- Uses fluid-cooled chiller plants, which are much more efficient than water- and air cooled datacentres.
- Less maintenance is required.

Design for Your Need

It is always better to have a system as per our need and solutions best fit for it. Unfortunately, our datacentres' power needs rarely get the exact fit they need. They are usually loaded too light.

There are ways to correct size, it is important to get as close as we can with electrical and mechanical systems so that they still operate properly when under loaded, but are still scalable for larger loads. We can achieve this by considering following few issues:

• Increase the duct, plenum, and piping infrastructure. This reduces operating costs and allows a measure of future proofing.

• Use variable speed motor drives on chillers, chilled and condenser water pumps. Also, use cooling tower fans to help with part load performance. This can be especially helpful when controlled as part of a coordinated cooling system.

• Examine efficient design techniques, such as medium temperature cooling loops and fluid-side economizers.

• Cooling-tower energy use is typically a small portion of energy consumption. If we increase cooling towers, we can improve chiller performance and fluid-side

economizers. Although this involves a larger cost up front and a larger physical footprint, but will gain savings in operational costs.
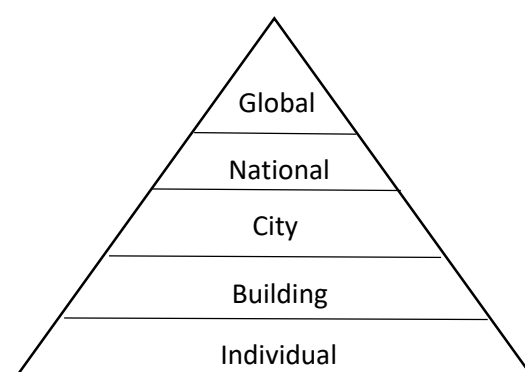
Put Everything Together

Only getting the cooling device is not called as efficient cooling. We have to think on larger scale for whole organization. Organization wide considerations must be implemented, including design and decision making issues. Such issues include:

• Use life cycle cost analysis as part of decision-making process.
   • Involve all stakeholders to keep the team together on the project.
   • Document and clarify the reasons for key design decisions.
   • Set computable goals based on best practices.
   • Introduce energy optimization as early as possible in the design phase to keep the
project focused and to keep costs minimized.
   • Include integrated monitoring, measuring, and controls in facility design.
   • Examine and benchmark existing facilities and then track performance.
   • Look back over the data and look for any opportunities to improve performance.
   • Evaluate the potential for onsite power generation.
   • Make sure all members of the facility operations staff get site specific training,
including the identification and proper operation of energy-efficiency features.

Q.3
  a.List and explain decision making pyramid with its levels.

Ans) At the bottom of the pyramid is Individual and the top represents the global community. The decisions made at one has the influence on the next level.

1.Global Actions: The decisions at both ends of the countries on the globe are concerned with the increasing CO2 concentration on the globe. Many organizations and NGO's are working together to get rid of CO2 impact on the globe. E.g., UN and international organizations, international NGO's etc.

2.National policies: National policies are prepared to reduce CO_2 levels. They are forming rules and regulations for the betterment of the Globe. E.g., Swachh Bharat Abhiyan, plastic ban, thermocol ban are the national policies in India.

3.City: The local government has various program to deal with CO_2 level they are in coordination with National level various campaign sweet shows and lecture seminar are conducted to create awareness about CO_2 emission impact on the globe. E.g., local government organizations like BMC etc.

4.Building: Building is the place where real action takes place. here many people talk about the design, technology, materials and various issues related to CO_2.

5.Individual: Individual actions are daily activities which have an indirect impact on the globe. Hence actions such as minimising use of water, reducing electricity use, recycling waste products use public transport carpooling go for healthy lifestyle. These actions can reduce emission of CO_2.

 b.Which things necessary for environmentally preferable purchasing plan?

Ans) (i) Business cards: The business cards can also be printed on recycled paper.

(ii) Bags: Make use of paper bags instead of plastic bags as they are not bio-degradable.

(iii) Paper: The organizations can go for recycled paper instead of branded name retailer.

(iv) Janitorial Cleaning Products: Organization can purchase chlorine free products which is used for cleaning as they are less harmful.

(v) Paint: Paint can contain heavy toxic metals which emits volatile organic compounds (as Xylenes) therefore, organizations can purchase zero or low volatile organic compound-based paints or go for natural colours.

(vi) <u>Food products:</u> Instead of plastic or thermocol cups, go for biodegradable food service-wave.

c.How to find out which product have low levels of toxins?

Ans) The ingredients in janitorial cleaning products can instantly burn eyes, skin and lungs. The consumer has to find out which products have low levels of toxins for healthy cleaning. The following observation can be done to find out which product contains low levels of toxins:

1. Read the product label and material safety data sheet purchasing the product.
2. Examine the list of institutional cleaning products that have been certified by Green Seal.
3. The public service website for fact sheets on safe and effective cleaning techniques.
4. Ask The manufacturer or vendor whether any less toxic alternative product is
available.
Read the review on the website before purchasing the product

d.Which things are needed to go paperless in organisation?

Ans) Going paperless for organisation saves money, time and increases efficiency and effectiveness in work. planning for paperless organisation can be executed in the following steps:

- Implement paperless document storage.
- Transition to paperless meetings.
- Use electric communication.
- Scan documents.
- Switch to digital receipts.
- Invest in energy efficient office equipment.
- Use e-signatures.

e. What is the use of Microsoft Office Share Point Server 2007? List its features

Ans) Microsoft Office SharePoint Server 2007
A Microsoft Office SharePoint Server (MOSS) is a robust solution as a CMS. Using it we can centrally manage our organization's information and maintain it. It is accessible through web browser for our employees. It supports all intranet, extranet, and web applications in one platform, thus eliminates need of multiple small systems. It also improves overall productivity by simplifying everyday tasks.
Features
The MOSS is used to work with Microsoft Office applications, e-mail, or web browsers in organization. Some of the functionality of MOSS includes:
• The ability to control access: It allows us to establish customized document management policies to control access rights. Access can be managed at a per item basis; we can also manage the retention period and expiration actions.
• Central management: It helps to store and manage all our documents and content in one central location. This helps with locating documents.
• Content management: It includes Master Pages and Page Layouts, which include templates allowing us to give our content a consistent look. We can also publish content from one area to another.
• Work across the organization: The content created in one part of the organization can be easily integrated into the system and stored in document libraries or web services. By doing this we avoid duplicating effort and making errors from having to manually re-enter that data.

f. What is Value Added Network? Give its benefits.

Ans) Value Added Networks

A VAN is a private network provider hired by a company to facilitate electronic data interchange (EDI) and/or provide other network services such as message encryption, secure email and management reporting. A Value-Added Network (VAN) simplifies the communications process by reducing the number of parties with which a company needs to communicate. The VAN accomplishes this by acting as an intermediary between business partners that share standards based or proprietary data. VANs may be operated by large companies for efficient supply chain management with their suppliers, or by industry consortiums or telecoms.

Benefits to using a VAN include:

• The alert system VANs can alerts organizations to transmission issues or delivery receipts.

• The archival storage VANs can store critical business data for extended periods of time.

• Audit trails Information including setup, configuration, and document transmission events can be audited.

• Real-time data delivery Data can be delivered in real time, rather than in batches, thus allowing speedier response to transmissions.

• Reliable and secure transmission VANs ensure that a company's data is securely transmitted and is received by the recipient.

Q.4

a. **Explain the recycling problems in china and Africa.**
   Ans) The global dumping ground for e-waste is China and Africa. Here we will discuss about e-waste has become a big problem for China and Africa and about the toxins that are in computers that make responsible recycling so important.
   China
   The E-waste problem in China was the issue of news headlines in recent years. Normally 80 percent of e-waste of America is shipped to china every year. Along with them Canada, Japan, and South Korea also send their e-waste to China. The size of e-waste exported every year by US to china is bigger than to consume a football ground area. It is exported to Guiyu, China.
   The E-waste recycling is big business in Guiyu and it gives approximately 80 percent employment to the peoples. Here separation of copper, gold, and other materials from the e-waste is done by dropping motherboards into acid baths, grind plastic casings from monitors, and grill components over open coal fires. That's why the town has largest dioxin levels on the planet. After disassembly, one ton of computer scrap yields more gold than 17 tons of gold. Circuit boards can be 40 times richer in copper than copper.
   Africa

Africa is also facing the same problem of consuming e-waste. In the Ikeja Computer Village, near Lagos, Nigeria, many vendors are selling the repaired products from the e- waste like computers, fax machines, cellular telephones, and other devices.

It sounds like e-waste is reused here in a positive manner, but actually 75 percent of the electronics shipped to the Computer Village are irreparable.

Nigeria has a good repair market, but it lacks a system to safely deal with e-waste. Most of the e-waste is winds up in landfills and unofficial dumps. As such, toxins seep into the earth.

And when plastic cases are burned, they mix carcinogenic dioxins and polyaromatic hydrocarbons (PAHs) into the air, which is very dangerous for health.

Every month approximately 500 shipping containers filled with used electronic equipment pass through Lagos. Each container can be packed with a load equal to:

• 800 computer monitors
• 800 CPUs
• 350 large television sets

Out of the material almost 75 percent of this material is not repairable. Currently African importers are happy with making small profit don't mind with the few items they can remanufacture and sell without caring of dumping useless materials into landfills.

b. **How to determine the system's long life?**

   Ans) According to the authors Toby and Anthony Velte, A system's life is based on three factors.

   Useful life : This expresses the equipment's lifetime, in which eventually the equipment wears out and it is not feasible to repair it anymore.

   Technological life : A system may become impractical to maintain even though it can still be repaired and maintained. For example, it might not be possible to find the right type of memory chips for the system because they are no longer made. Another way to look at this is obsolescence.

   Economic life: A system might still be functional, but it costs too much to

use. It might also be that newer systems can be purchased that have lower operating costs so that the payback period of making that purchase is short.

c. **Which are benefits to leasing the equipment?**
   Ans) Keeping your equipment up to date: As the technology is changing the computers become obsolete quickly. One will not get financial burden for computer obsolescence. After expiration of lease, one can change computer and can search for new deal.
   Predictable monthly expenses: You'll always know what you're spending on your machines, because you've already hammered out a deal and you know what you're paying.
   Low (or no) upfront costs: The low upfront cost will lower down the a down payment
   Staying competitive: If it's important that you will be technologically equal (or better)with your competitors, leasing gives you an option to get the latest and greatest equipment with regular interval.
   Paying more, overall: One has to take care that leasing will not become more expensive than outright buying.
   A deal is a deal in leasing, one has to pay for the equipment even if you don't use equipments anymore. If your business changes or leased equipment is no longer needed, but you're still make the monthly payments.

d. **Write a short note on Electronic product environmental assessment tool (EPEAT) certification.**

   Ans) The certification programs take all precautions before the release of product in the market. The consumer has to check the level of certification before purchasing a product.
   EPEAT is one of the US government certification organization body. It makes it mandatory to purchase the equipment with EPEAT certification mark on the device. It has set up performance criteria that needs to be passed by the product. EPEAT gives a rating depending on the products that meets the criteria. It has certification levels as bronze, silver and gold.

- <u>Bronze</u>: A product that meets all required criteria.

- <u>Silver</u>: Product that meets all criteria plus at least 50% of optional criteria that apply that apply to the products being registered.
- <u>Gold</u>: Products that meet all criteria plus at least 75% of optional criteria that apply to the product being registered.

The EPEAT maintains list of certified devices in the range of bronze, silver and gold on their website.

e. **What is Blade server? Give its benefits.**

Ans) A blade server is a server chassis housing multiple thin, modular electronic circuit boards, known as server blades. Each blade is a server in its own right, often dedicated to a single application.
The blades are literally servers on a card, containing processors, memory,
integrated network controllers, an optional Fiber Channel Host Bus Adaptor(HBA) and other Input/ Output (I/O) ports.
The main function of blade servers is that it increases our organization's data centre capabilities, without adding to its size
Some benefits of blade server include
1.**Less space needed**
Blades take up 35 to 45 percent less space than tower or track-mounted servers.
2.**Reduction of power use**
You reduce the power supplies needed.
3.**Lower management cost**
When you consolidate your servers,deployment, management and administration are simplified and improved.

f. **What is the use of Remote Desktop? Explain its components.**
Ans) Remote desktop can be used for the following purpose :
1.To power thin clients:
Remote Desktop can be used to connect your thin clients to the server.
2.To extend the life of existing machines:
Remote Desktop allows the user to access everything on the remote computer including files, applications, and network connections. Remote Desktop not only allows the user to access the remote computer's files, but

the desktop appears exactly as it does on the remote machine. There are two

components to a Remote Desktop connection :

a.Server : All machines will be connecting remote computer.

b.Client: The computer you will use to form your connection with the server.

- Remote desktop is a program or an operating system feature that allows the user to connect to a computer in another location.
- Before you can use Remote Desktop, it's necessary to prepare your server and client computers.

There are two components to a Remote Desktop connection:

• Server: It is the remote computer to which we want to connect.

• Client: It is the computer we will use form our connection with the server.

1. Remote Desktop Server

We have to specify number of users allowed for a Remote Desktop server at the time of configuration, so that authorization can be achieved. These user accounts must have passwords. If the password is not in place then we have to create it.

When we configure our server for Remote Desktop, we need to enter the user account name when Windows asks for the object name in the Select Users dialog box.

2. Remote Desktop Client

You can use a Microsoft Remote Desktop client to connect to a remote PC and your work resources from almost anywhere using just about any device. You can connect to your work PC and have access to all of your apps, files, and network resources as if you were sitting at your desk. You can leave apps open at work and then see those same apps at home - all by using the RD client

Q.5

a. **How CRM segregate the people of organization in group?**

Ans) For customer you just an organization with some name, without having knowledge of our operation carried out in our company. The customers very well knows that that if they purchase something, someone has to process the payment, package the product for shipping and perform the actual shipping.

The Customer Relationship Management (CRM) is a philosophy of coordinating among all the stakeholders in an organization so that the customer is served well and has the best experience possible being our customer.

CRM segregate the people of our organization in the following groups:

• Customer Facing Operations: These are the people and technologies a customer experiences when he or she interacts with the company. This can include face-to- face interactions, telephone calls, instant messaging, web chats, e-mail, and so
forth. This can also include kiosks and web self-service.

• Internal Collaborative Functional Operations: These are the people and technologies that support the company policies and back office operations that have a direct impact on the activities of the Customer Facing Operations group. This includes IT, billing, maintenance, planning, marketing, finance, and manufacturing.

• External Collaboration Functions: These people and technologies support the organization in its developing of relationships with outside groups. These groups include suppliers, vendors, distributors, lobbying groups, and trade associations.

• Customer Advocates and Experience Designers: These are the people and technologies that help deliver value to the customer and profit to the organization.

• Performance Managers and Marketing Analysts: These are the people and technologies that design key performance indicators and collect metrics and data that help keep CRM on track. This is the group that establishes milestones and data
to determine if the CRM process is being effective.

• Customer and Employee Surveyors and Analysts: These are the people and technologies that determine whether customer and employee relationships are getting better or getting worse.

b. What are the steps involved for good green procurement program?

Ans) The steps involved in implementing green procurement program are as follows.

• Get organizational support: The organizational policies and procedures need to be changed to accommodate such a change. Those responsible for making purchasing decisions must be involved in the implementation process, because their suggestions and support are important.

• Conduct a self-evaluation: We need to evaluate our current purchasing practices. This will help us to achieve starting benchmark and also clarify what we purchase, how much we purchase, where it comes from, and how much it costs. This will help us to measure the success of our green procurement efforts.

• Set goals: We have to set big goals that have specific measurements.

• Develop a strategy: We need to make a plan for achieving our goals. We need to identify how we will implement changes necessary to reach those goals. You need

have to short and long term solutions for it.

• Run a pilot project: We should start from a small project, rather than directly

implementing all at once. If it succeed then we can go for all.

• Implement the plan: After purchasing is complete, we will have to assign

accountability and develop a communications plan that addresses employees,

customers, suppliers, partners, and the public.

• Review the program: We need to evaluate our green procurement program on

regular basis. Consistently check whether the plan is meeting its stated goals and objectives.

c. Explain transitioning four-step process.

Ans) It is wonderful to say that many companies have adopted green practices, ut the truth is companies have started adopting these practices because of the w which requires companies to achieve certain level of environmental. That is, mese practices are adopted as a compliance issue initially but now companies are bing beyond what was

required. This transition from compliance to stainability is a four step process:

Compliance: Many organizations started their eco-friendly behaviour because it was the law which they have to follow. The aim was just to achieve certain level of environmental responsibility because of compliance issues.

Personal Commitment: Organization can only be as dedicated to environmental friendliness as the CEO or the leader of the organization. If leader or CEO leaves the organization, there are chances that green initiatives will go out the window. So, it required that notion of being green should be signed by entire organization and not only the CEO of the organization.

Public Trust Earning: Public trust is a matter of increasing brand attractiveness. Advertising green efforts of the organization is good idea but that has to be supported by actual actions.

Sustainable growth: Once the green goals are met, identify the opportunities to set new goals, develop green products, increase energy efficiency, reduce waste and conserve critical resources.

d. Write a note on SMART goals.

Ans) Goals are part of every aspect of business/life and provide a sense of direction, motivation, a clear focus, and clarify importance. By setting goals, you are providing yourself with a target to aim for. A SMART goal is used to help guide goal setting. SMART is an acronym that stands for Specific, Measurable, Achievable, Realistic, and Timely. Therefore, a SMART goal incorporates all of these criteria to help focus your efforts and increase the chances of achieving your goal.

SMART goals are:

Specific: Well defined, clear, and unambiguous.

Measurable: With specific criteria that measure your progress toward the accomplishment of the goal.

Achievable: Attainable and not impossible to achieve.

Realistic: Within reach, realistic, and relevant to your life purpose.

Timely: With a clearly defined timeline, including a starting date and a target date. The purpose is to create urgency.

e.Which steps are involved to conduct energy audit?

Ans) In order to conduct an energy audit, we need to follow these steps:

• Assemble your team: We need to bring together a team with experience and knowledge of all energy-using systems, processes, and equipment. We can use our system specialists and facilities engineers, but we may discover that we need to hire an outside expert for objectivity and expertise.

• Plan and develop a strategy: Figure out which systems we are going to evaluate and then assign team members to perform those tasks. Use benchmarking information to identify facilities and systems that aren't performing properly.

• Generate a report: Based on our audit results, write a detailed summary of steps that can be taken to reduce energy use. The report should also recommend actions that should be implemented.

Q.1

a. Explain how green computing effect on cost saving.

ANS:-Cost Savings If properly followed Green Computing practices can save millions of rupees of an organization. Ecologically responsible practices must be adopted. For green computing, initial investment will be more, but eventually not only we will save money but also help to sustain the environment.

1. Hardware We can reduce cost for hardware is T o simply buy less equipment

a) Taking the Steps, Gaining the Rewards: Using server virtualization to reduce its energy use to save money and less damage to the environment

b) Use What You Have: Before purchasing new equipment, once again go through our old inventory and old dump electronic elements.

2. Power Saving the power is saving the money as well as saving the environment.

a) Desktops: The power can cab be effectively used in desktop computer by enabling power management settings

b) Datacenters: The increase in servers and network infrastructure has caused a sharp hike in the electrical usage in the datacenter. Where using smart switches cost can be saved.

c) Consumption: From properly organizing physical space to reduce cooling loads to using energy-efficient power suppliy.

b. **How hardware deployments can affect the environment?**

Ans.There are a number of ways that specific hardware and hardware deployments can affect the environment. We can reduce cost for hardware is to simply buy less equipment. Taking the Steps, Gaining the Rewards: The

Nashville's Vanderbilt University and the state of Oregon have begun datacenter virtualization projects and expect to save millions of dollars by the time the projects are finished. Vanderbilt's Information Technology Services organization is using server virtualization to reduce its energy use to save money and less damage to the environment. Use What You Have: Every time before purchasing new equipment, once again go through our old inventory and old dump electronic elements. If we found something that can be reused and renovated with energy efficiency, first do that. We can take an older computer and turn it into a thin client for the processing and storage duties are conducted at the server, as the client just needs enough power to be able to display what is going on at the server. A thin client uses 15 watts of energy instead of the 150 watts that workstations use on an average. If we are doing so our energy bill will be ten times less than what it is now

c.What are the steps involved for measuring of carbon footprint?

Ans.A carbon footprint is defined as: The total amount of greenhouse gases produced to directly and indirectly support human activities, usually expressed in equivalent tons of carbon dioxide (CO2). In few organizations, carbon footprint might mean that everything is tallied—sourcing materials, manufacturing, distribution, use, disposal, and so forth. Measuring Measuring of carbon footprint is time consuming job. Following steps can be used for it.

Step1. Define the boundary for your carbon footprint We need to monitor the carbon footprint process year by year, so it is very important to have some rules to follow about scope of work to be done. Our primary objective is to reduce the emission of carbon, if we fail to define the carbon footprint boundary can inhibit comparisons against benchmarks and could also undermine meaningful monitoring of performance. There are three types of boundaries: Type 1: Operational control: Using this approach every operation of our organization/company is captured in the carbon footprint. This also includes supply chain if an organization has sufficient operational control over suppliers. Type 2: Financial control: In this approach all financial elements are included. Often this excludes elements which our company may operate but not financially control and therefore using this approach can result in a smaller carbon footprint. Type 3: Equity control: This approach includes all elements that our company owns. If our company has part ownership then the proportion ownership is used to calculate the relevant carbon footprint attributable to that company.

Step2. Decide which emissions will be included under scope: Scope refers to the emission types captured in a carbon footprint. The scope of an organization's carbon footprint also breaks down into three components. Scope 1 emissions: These are direct emissions from assets that are either owned by our company (i.e. fleet vehicle emissions from the consumption of fuel) or emissions produced through an on-site activity (i.e. emissions from the burning of natural gas in a company's boiler). Scope 2 emissions: Scope 2 covers all indirect emissions or more specifically emissions derived from the production of purchased electricity. Here company hasn't actually produced the emissions associated with electricity generation but due to the consumption of electricity to power lights, equipment etc. we can say that our organization is indirectly responsible for these emissions. Scope 3 emissions: Scope 3 covers all other indirect emissions which are not as a result of the consumption of purchased electricity. This includes a wide array of emission sources including waste, consumables, staff commute, supply chain emissions, water use etc.

Step 3. Define your carbon footprint period A carbon footprint is typically measured across an annual period. When choosing our period for measurement it is best to think of other reporting cycles which can be used as the set time-frame. Step 4. Use a practical approach to collect annual data Once we have defined our boundary and the type of emissions we are going to capture, we'll then need to collect data on all elements that we are going to measure carbon emissions for (i.e. electricity and gas usage, vehicle mileage, waste volume etc.)

d.Describe the functions of Basel Action Network.

Ans.The Basel Action Network (BAN) is a non-profit organization which operates globally. It is focused on working with the human rights and environmental impacts of e-waste. It also works to ban waste trade and promote green, toxin-free design of consumer products. BAN performs these broad functions:

 • It provides information on the waste trade for journalists, academics, and the general public by using e-mail, newsletter and electronic action alerts.

 • It also provides international policy advocacy. BAN works with United Nations (UN), Organization of Economic Cooperation and Development (OECD) and the UN Environment Program (UNEP) Chemicals Program and Governing

Council. It also has produced Model National Legislation on toxic waste trade for developing countries.

• BAN conducts field research and investigations in developing countries and provides photographic and video documentation of e-waste trade.

• BAN participates with NGOs around the world in campaigns to counter toxic trade.

e.Mention the steps taken by china managing their own e-waste problem?

Ans.China is major destination of much of the world's e-waste. The Chinese regulation is normally referred to as China RoHS. China RoHS, contains a list of included products which is called as catalog. Products:

There are many product types which are not part of of EU RoHS are within the scope of China RoHS. Which includes the following:

• Automotive electronic

• Radar equipment

• Medical devices

• Semiconductor and manufacturing equipment, components, and some raw materials

• Some packaging materials Products shipped to China must be marked as to whether the items are compliant or noncompliant. The Electronic Information Products (EIP) logo or other label is used to mark parts that do not have unacceptable levels of substances listed by China RoHS. Materials: Products that contain hazardous substances must be marked with the EIP logo and include an Environmental Protection Use Period (EPUP) value listed in years. China RoHS bans the following substances:

• Lead • Mercury

• Cadmium

• Hexavalent chromium

• Polybrominated biphenyls (PBBs)

• Polybrominated diphenyl ether (PBDE) Marking: The initial requirement is for a mark and disclosure of any of the six aforementioned hazardous

substances and their locations within the product. Labels must contain the following information:

• Whether the product contains any of the six hazardous substances. If they are present, the "Environment-Friendly Use Period" (EFUP) must also be determined and indicated

. • Disclosure of which hazardous substances are contained in the product and the component(s) they are present in.

• Packaging material must be disclosed on the outside packaging.

• The date of manufacture. The regulations have not been implemented yet, being postponed in their formal adoption twice. There is no formal schedule for completion of the Catalog

f. What STEP stands for? Explain objectives of STEP.

ANS :- As e-waste is an international concern, United Nations has taken a lead and implemented its solving the E-waste Problem (StEP) program. StEP is not supposed to misunderstand as a strict organization which monitors office buildings where CRTs are being disposed of unsafely. Instead StEP is a program where companies, governmental organizations, academic institutions, nongovernmental organizations (NGOs), and nonprofit organizations around the world can participate. To be involved with StEP, an organization has to commit to active and productive involvement in the StEP program. StEP's prime objectives are as follows(Year 2016):

1. Research and piloting: Overcoming the e-waste problem requires knowledge, leadership and action. By conducting and sharing scientific research, Step is helping to shape effective policy-making. Research is also key to reducing or replacing resources used in manufacturing. By fostering the generation of problem-solving ideas, Step can support their implementation and analyze their effect.

2. Strategy and goal-setting: While the overall goal is the elimination of e-waste as a problem, there are realities to be embraced along the way. Targets, goals and strategies must take into account the varying circumstances of different jurisdictions and markets. A key strategic goal is to empower pro-

activity in the marketplace through expanded membership and to secure a robust funding base to support activity.
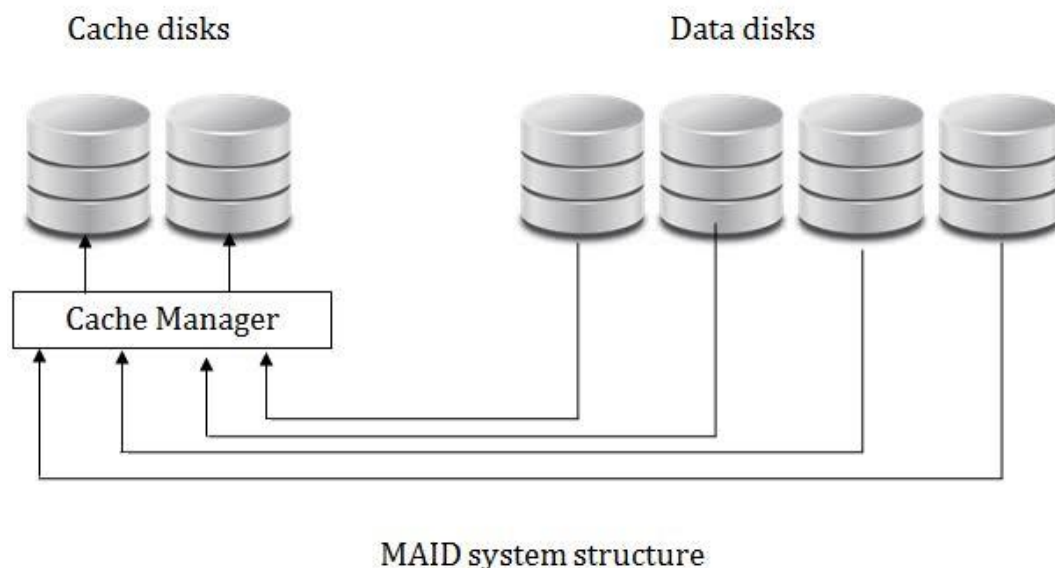
3. Training and development: Step's global overview of e-waste issues makes it the obvious provider of training on e-waste issues. The Step EWaste Academy brings together diverse groups of participants and trains them on key issues. A syllabus is being defined with the ultimate goal of expanding the Step E-Waste Academy.

4. Communication and branding: Brand communication and awareness is vital, both within the membership and throughout the industry as a whole. One of Step's priorities is to ensure that members, prospective members and legislators are all made aware of the nature and scale of the problem, its development opportunities and how Step is contributing to solving the e-waste problem.

Q.2

a. Explain MAID and RAID.
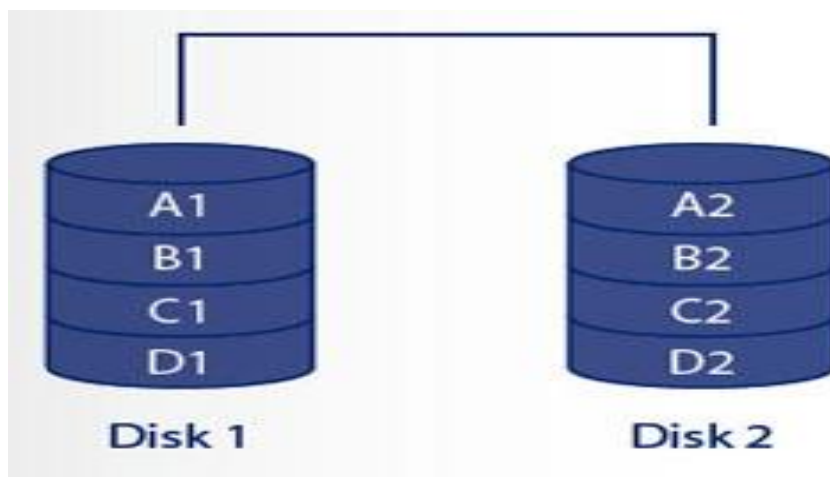
ANS:- MAID: A massive array of idle disks (MAID) is a system that uses hundreds or thousands of hard drives for near line data storage.

MAID system structure

MAID is designed for write once, read occasionally (WORO) applications. The drives in this disk only spin whenever accessed. As small amount of the data is being accessed, these disks can be powered as needed, thus reducing the

power used to run them as well as reducing the generation of heat, which in turn reduces cooling costs. MAID has increased storage density and is much less expensive, thus saving power and the need for cooling. MAID solution are somewhat slow, its data access can take a few milliseconds up to 10 seconds. This system allows a dense packaging of drives, and typically only 25 percent of the disks are spinning at any given time. Use of SATA drives made architecture of MAID more popular because SATA disk are made to be spin as per need. So it is always a good solution to use MAID architecture for storage for achieving energy efficiency.

Power-managed RAID: The RAID (redundant array of inexpensive disks) is majorly known for its security features. A typical RAID consumes more power. To deal with this issue, a new form of RAID has been introduced. A Power-managed RAID provides parity protection, but with only some of the RAID disks actually turned on. When data is written, only the parity and associated data drives are powered up.

When data is read, only the disk being read needs to be powered up. Here Non-disruptive and sequential read/writes are accomplished by staging the data to an always-spinning drive, while the next drive is being powered up. The result is that your organization can have hundreds of terabytes in storage in a single footprint which in turns results in power saving.

b. How computer monitor settings save energy?

The computer monitors consumes maximum power. Even new monitors can consume 100 W of power while they are on. In sleep mode, they typically use 5 W or less. Adjusting monitors to automatically enter sleep mode after a period of nonuse is a quick-and-easy way to reduce costs. Even all LCD models are not power savers. It is always better to know how much power our monitor power

draws before buying it. Settings: Normally we suppose to turn off monitors when not in use. We can also use some other settings for power saving, such as setting proper brightness of screen, choosing proper color scheme, not using screen savers animations etc. Following table shows the energy consumed for color to display on

screen on an average.

Color	Watts Used
White	74 W
Yellow	69 W
Aqua	68 W
Silver	67 W
Blue	65 W

Red	65 W
Lime	63 W
Gray	62 W
Olive	61 W
Purple	61 W
Teal	61 W
Green	60 W
Maroon	60 W
Navy	60 W
Black	59 W

It is clearly visible that White and bright colors can use up to 20 percent more power than black or dark colors.

c. What is Polling? Give examples.

Polling: It is the process of automatically checking of, if a given action has been taken draws power from idling computers, because it automatically wakes the computer up to check for a given event. Every time an application polls for something, the CPU wakes from an idle state and consumes power. Polling is the process where the computer or controlling device waits for an external device to check for its readiness or state, often with low-level hardware. For example, when a printer is connected via a parallel port, the computer waits until the printer has received the next character. These processes can be as minute as only reading one bit. This is sometimes used synonymously with

busy-wait polling. In this situation, when an I/O operation is required, the computer does nothing other than check the status of the I/O device until it is ready, at which point the device is accessed. In other words, the computer waits until the device is ready. Polling also refers to the situation where a device is repeatedly checked for readiness, and if it is not, the computer returns to a different task. Although not as wasteful of CPU cycles as busy waiting, this is generally not as efficient as the alternative to polling, interrupt-driven I/O. For example 10 polling actions that occur within 1 second. Schedule them so that they run immediately after another, rather than at various times during that period. By grouping them together, the computer only has to come out of an idle state once, rather than multiple times.

d. How to achieve proper humidity levels?

Higher level of humidity can destruct datacenters equipment. Even very less humidity level can also not suitable for the equipment's. So we need to maintain and manage proper humidity level in our work area.

 Following tips can help us to achieve proper humidity levels

. • Establish a humidity sensor calibration (adjustment) schedule: The humidity sensors can give poor readings over the time, so it required to make frequent adjustments on regular basis, more so than temperature sensors. Also, incorrect humidity sensors are less likely to be noticed than incorrect temperature sensors. So, establish a frequent test and calibration schedule for our humidity sensors

. • Allow for sensor redundancy: Purchase adequate number of sensors to measure datacenter's humidity level. To ensure a tight control, multiple sensors should be used. At the very least use two, but more are better. • Manage humidity with a dedicated unit: If ventilated air is used (maybe from an air-side economizer), control humidity with a single ventilation air handler.

 • Lock out economizers when necessary: When using an air-side economizer, minimize the amount of air that's brought in when the dew point is low. This saves money on having to humidify the dry air.

 • Centralize humidity control: Each datacenter should have its own centralized humidity control system. Having multiple systems may affect each other's work and will result in loss of effectiveness

e. How to prevent Recirculation of Equipment Exhaust?

The new devices generally are energy efficient, but their cooling can be absorbed by other old devices. It results in all devices may heat unnecessarily. As an example networking gear can get hot enough on its own and doesn't need help from its neighbor nor does it need to heat up its neighbors. But using few tips we can eliminate exhaust from being reabsorbed by other devices:

1. Hot-aisle/cool aisle: Adjust the hot-aisle/cool-aisle design mentioned above in this chapter.

2. Rigid enclosures: Decide an unalterable place to keep exhaust heat from being sucked back into the device's cool air intakes.

3. Flexible strip curtains: Use flexible strip curtains to block the open air above racks that have been configured into a hot-aisle/cool-aisle layout.

4. Block unused rack locations with blanks: The equipment typically fetch cool air from the front and exhausts it out the back. Blanking (Make a place to pass the air) open areas under equipment prevents the exhaust from being drawn back into the device.

5. Design with cooling in mind: Some equipment does not fetch air in from the front and exhaust it out the back. Some have top discharge or side to side designs. In this situation we can configure (rearrange) racks in such way that the equipment doesn't blow into the intake of other equipment. 6. Select racks with good airflow: We need to purchase racks that don't have an internal structure that would block the smooth flow of air to equipment.

f. State the advantages of custom centralized air-handling system.

The custom centralized air-handling system is the best solution for cooling. This system has several advantages over the multiple distributed unit system, as listed below. ⍰ Better efficiency. ⍰ Can use surplus and redundant capacity. ⍰ Unit's works in combination with each other, instead fighting against each other. ⍰ Uses fluid-cooled chiller plants, which are much more efficient than waterand air cooled datacenters. ⍰ Less maintenance is required.

Design for Your Need It is always better to have a system as per our need and solutions best fit for it. Unfortunately, our datacenters' power needs rarely get the exact fit they need. They are usually loaded too light. There are ways to correct size, it is important to get as close as we can with electrical and mechanical systems so that they still operate properly when under loaded, but

are still scalable for larger loads. We can achieve this by considering following few issues

: • Increase the duct, plenum, and piping infrastructure. This reduces operating costs and allows a measure of future proofing

. • Use variable speed motor drives on chillers, chilled and condenser water pumps. Also, use cooling tower fans to help with part load performance. This can be especially helpful when controlled as part of a coordinated cooling system.

• Examine efficient design techniques, such as medium temperature cooling loops and fluid-side economizers. • Cooling-tower energy use is typically a small portion of energy consumption. If we increase cooling towers, we can improve chiller performance and fluidside economizers. Although this involves a larger cost up front and a larger physical footprint, but will gain savings in operational costs

Q.3

a. What are the ways to control the use of water in organisation.

The use of water is a big issue that can be considered for greening process in our organization. How much we can in this regards is depends upon how much water is used. For example urban area offices generally use less amount of water, while in rural area water consumption is more as offices are beautified with surrounding grass lawns. Following few tips will help us to control the use of water: • Document our maintenance and upgrades to fixtures.

• Monitor our water usage. Keep a log of meter reads on a weekly basis so that points in usage can be assessed and repairs made in a timely fashion.

• Install leak detection and water conservation tools, such as isolated meters and shut off valves to each appliance or fixture. Rain shut-off devices are especially helpful if we have grass to water.

• Determine flow rates, flush volumes, and daily water use. Put a plan in place to reduce the amount of water that's used.

• Install low flow fixtures. If we have already got low flow fixtures, keep up on their maintenance.

• If we do have an irrigation system in place, consider these issues to prevent wasted water. • Inspect our property for leaks on a regular basis. Repair leaks as soon as they're detected.

• Check our irrigation systems on monthly basis and look for problems.

• Sprinkler heads routinely break and can go unnoticed for months

. • Adjust watering schedules to fit the needs of the plants. • Consider getting rid of turf and installing plants

. • Pick weeds early in the season. Grass and weeds are both huge water consumers.

• If we have any tropical plants, be sure they are grouped with plants that have similar watering needs.

• Annuals should be watered on a separate schedule. Their roots are shallower and need more frequent watering, but in lesser amounts.

b.Which things are necessary for evaluating suppliers for their level of environmental responsibilities?

ANS:- We need to also expect the changes from our suppliers. When we are evaluating Suppliers for their level of environmental responsibility, we need to take care of Following things.

• What are the supplier's environmental values? How are they measured and Enforced?

• Does the supplier have an environmental management system?

• Who is accountable for environmental performance? Is it just the supplier's Environmental staff, or is it all employees?

• Does the supplier comply with federal, state, and local environmental laws?

• Is the supplier willing to understand and work with our environmental goals?

• Has the supplier made efforts to design and manufacture products with the

Environment in mind?

• How efficient is the supplier in using resources, materials, and energy, as well

As recycling and pollution prevention?

• Will the supplier reclaim its products or packaging at the end of their useful Lives?

All the things mentioned above may not be followed by every supplier. But we can Emphasis on our requirements, this will spread awareness among the supplier. Also We will come to know about suppliers efforts that meet our own green sourcing needs Or not and how well they align with our corporate culture.

Communicate with Your Suppliers During the sourcing process and monitor compliance and progress, we need to clearly Set and convey our expectations to our suppliers. It is going to be a good start and help Us smooth conduction of green sourcing . We also need to make the supplier understand what they need to provide and how They will be measured at our place. This ensures that they are providing what we want And are putting in place the processes to achieve compliance.

For example, this can include detailing how suppliers are to recycle discarded Materials, that they need to use less-toxic chemicals, and that they create Products which are easily disassembled for less waste and easier recycling.

c. **Describe intranet? How to build it?**

ANS:- An intranet is a private network that is contained within an enterprise. It may consist Of many interlinked local area networks and also use leased lines in the wide area Network. Typically, an intranet includes connections through one or more gateway Computers to the outside Internet. The main purpose of an intranet is to share Company information and computing resources among employees. An intranet can Also be used to facilitate working in groups and for teleconferences.By using intranet of our organization, all employees can access their documents from Anywhere in the office. We also not need to reprint the manual book; just send out an e-mail to our employees that the change has been posted to the manual.Intranets reduces the

amount of paper that is used in-house. The files stored on the Public Internet are accessible to anyone, files on our private intranet are only Accessible to us and our coworkers.

Building an Intranet:

If we have to go for an organizational intranet set up, it needs some specific Hardware as well as software's. PartsWe need following four components for intranet set up as shown in next figure:

• Local area network (LAN): We need use LAN architecture to set up Intranet.• Web server: Intranet is nothing but an internal website. For running the Website, we need a web server. Also we need to host our website locally On web server. The two most popular web servers we can use as Apache And Microsoft Internet Information Server (IIS). Following table compares These two. Also we can outsource our web hosting which is less costly and A lot easier. Often, providers supply easy-to-use security and other tools And templates so we can set up a secure intranet quickly.

• Web browsers on client PCs: To access the intranet website we need Web browser software, such as Internet Explorer or Firefox.

• Web page development software: We need to develop a website using

HTML and supportive web technologies.Installation of Apache webserver is simple but after installation it requires lot of Configuration to be done. Foe better management of webservers we can refer the Manuals for both the web servers. intranet in this form is great for local users, but it can also be accessed Remotely for the people who are working from home for our organization. We Can achieve this by using a virtual private network or a secure WAN connection.Content Management SystemsThe websites or intranet are the dynamic entities. We should install a contents Management system (CMS) to easily add, delete, and update content. A CMS Makes intranet maintenance much easier and can be done by someone with a Very limited background with HTML, opening up the role of content management To a wider range of users.

Among other things, a CMS facilitates the following:

- Addition of new content
- Removal of old content
- Better organization of the data on the site
- Managing text, articles, documents, files, and other communications
- Managing images and other elements

There are a many free CMS solutions are available for both Windows and Linux.The Windows CMSs include Community Server and DotNetNuke. DotNetNuke is shown in following figure:The Linux supports a variety of well-known CMS solutions such as Drupal,Joomla, Mambo, Moodle, Post Nuke, and Xoops. Following figure shows Joomla Interface. Once our website is set up, we need to explore it to our users for its usefulness. We need to take regular surveys to find out what people find most useful and What helps them to be more informed and efficient.

d. What is Telecommuting? Explain in brief.

ANS:-Telecommuting is a work arrangement in which the employee works outside the office. It helps to reduce our environmental impact. The major problem in make use telecommuting is to make the people to agree on its use. Here the worker might interested to use it but management may hesitate to implement it. Telecommuting is often wrongly perceived as a vacation and workers not having to do their share of the work. But that it is not the fact. The Research organization IDC stated that 8.9 million Americans worked at home at least 3 days a month in 2004. That's only a tiny increase from the 8.7 million people IDC reported as teleworkers in 1999. Hewitt Associates, a human resources consulting firm, conducted its own survey of 936 large companies. Its results showed that 32 percent of these companies offered telecommuting opportunities in 2004. It was a 1 percent increase over the prior year. Sun Microsystems operates its own telecommuting program called iWork. With it, workers can work from home, or if they need to they can drive to a flexible work center when they need an office. Around the world, Sun has 115 flexible office locations. Although this is a nice arrangement for employees, Sun isn't missing out on any cost savings. Sun says this setup has saved the company $255 million over 4 years. It has reduced its cost for real estate by eliminating 7,700 seats. The company also saves money by not having to pay so much for electricity and not having to upgrade computers. It is not as such simple to

telecommute like sending a worker home with a company issued VPN client, a username, and password. For making it effective, companies need to determine which job categories should be eligible; then guidelines and performance goals need to be established. The company also needs to decide what equipment it should provide and develop training for employees and managers.

e. **Which things are needed to go paperless in organization.**
ANS:-There are many ways we can adopt in organization for going paperless, it is not just the scanners that will do the work. Every stakeholder of an organization must be agree to adopt the approach. Once we decided to go for paperless, we need to take care of following things:
 • It won't happen overnight: The execution of going paperless cannot be implemented at one go in organization. We need to start gradually by scanning old papers. Then we can go for incoming paperwork as paperless.
 • "Paperless" isn't an absolute: Sometimes we may require a hard print of paper. Some of our clients or business partners will still want their interactions done via paper. Also, there will likely be some tax documentation that needs to be maintained as hard copies.
 • You have to sell it: The idea of going paperless might not be easily accepted by all. We need to convince our people by explaining them effectively about benefits of the new system. For an employees it might be hard to change. The best thing we can do is educate them about the benefits of being paperless, and understand that it will take some time for everyone to come around. Give it time. Going paperless will save money in in the cost of printing, mailing, shipping, and storage. But as we proceed with the system, there are other advantages also:
 • It takes less time for finding lost paperwork
. • It gives ability to access most documents in seconds.
 • It gives ability to access all our documents from home or satellite offices.
 • It saves the space in our office as filing cabinets are moved out.

f. **Write a note on PDA and Tablet PC.**
ANS:-**PDAs**
 PDA is a term used for a small, mobile, handheld device that provides computing and information storage and retrieval capabilities for personal or business use, often for keeping schedules, calendars and address book information handy. This devices also comes with memory card slots for

data storage, and a wireless connection. PDAs can be used for delivering a package, the delivery driver might ask us to sign for the package on his PDA. The PDAs typically run a version of Microsoft Windows Mobile for Pocket PCs or with the Palm OS.

Tablet PCs

A tablet PC is a portable PC that is a hybrid between a personal digital assistant (PDA) and notebook PC. Equipped with a touch screen interface, a tablet PC usually has a software application used to run a virtual keyboard. However, many tablet PCs support external keyboards. Tablet PCs have built-in Web browsing capabilities, multiple connectivity options, capacitive touch screens and multimedia - including high definition (HD) support. Tablet PCs are also equipped with accelerometers, which allow users to view display screens in portrait or landscape mode. Generally they comes with Microsoft Windows XP or Vista OS.

Q.4

a. List various way to clean a hard drive. Explain any two.
ANS:-Only formatting is not sufficient to clean the hard drive. Information can be retrieved from the hard drive even after format. After formatting the hard drive only makes operating system unable to display the data. The quick formatting just writes to a portion of the disk, but most of the old data is still there and is readily accessible using fairly common recovery tools. Even disks that have been completely formatted can be partially or completely recovered. We can safely decommission our old hard drives using several methods such as Deleting, Overwriting, Degaussing, Mechanical Shredding, Secure Erase etc
1. Deleting Generally use delete the data case they need to removal of it from hard drive. In deleting process data is actually not deleted. When a file is deleted, the file system's pointer to that file is removed, but that doesn't remove the file itself. The only way the file will be completely removed, using this method, is if data overwrites the area where the file resided. The data remains on the hard drive, and it can be recovered with the right software

2. Overwriting The removal of data is also possible with overwriting random data by using three times. In U.S. Dept. of Defense (DoD), rule is there to overwrite the data over three times because there may be problems with the following:

• Incompetence of the overwrite procedures

• Equipment failure, such as a misalignment of read or write heads of the disk

• Inability to overwrite bad sectors of tracks of data in inter-record gaps Software overwriting is demonstrated in following figure. This solution is very useful because of availability of many applications to achieve this as well as we can also do it in our home. Also overwritten drives can be used again in our organization or we can sell them. Problem with software overwriting is, it is a time consuming process. It can take several hours to wipe one drive. This can cause a loss of productivity, especially in an organization that is overwriting hundreds or even thousands of hard drives

3. Degaussing The powerful magnetic force can erase a data on magnetic disk. This process of erasing data is known as degaussing. It uses a machine that produces a strong electromagnetic field and destroys the information stored on a hard drive. Because today's hard disks are strongly protected from the magnetic signals we need stronger electromagnetic field to erase the data from it. The process of deleting the data using high magnetic field is very fast, but it destroys other components of the hard drive, leaving them inoperable. So they cannot be reused and we are not sure about all data is erased or not. We need to take care while degaussing machine. While wiping one hard drive, we run the risk of destroying other machines that might be in the area. This process is generally conducted by highly professional third party. These companies buy the degaussing equipment and perform the work.

4. Mechanical Shredding Here the old hard drives are put down into a shredder machine and they are torn into a many small pieces. We can give our all drives to shredder machine holder, pay for work and get it done, we need not to purchase a new machine. Benefit here is that we are sure that all information is erased and there is no way to get it back after shredding a hard drives.

5. Secure Erase A Secure Erase technology was introduced in 2001. ATA and SATA drives contain the technology to erase the data contained on them. But

this facility by default has been disabled by most motherboard BIOSs probably because of concerns that a user might accidentally destroy data. The National Security Agency and the National Institute for Standards and Testing have given Secure Erase a higher security rating than block overwriting software. Secure Erase is approved to erase that data. We just have to download a Secure Erase utility software. And make use of it to erase our data permanently.

b. Write a short note on refurbishing.

ANS:-**Refurbishing (renovate)**

The computer refurbishers recondition discarded computers to get them in working order. This is generally done by commercial refurbishers such as Dell Refurbished, IBM Refurbished, and Amandi Services. There are also noncommercial refurbishers, which are usually nonprofits or school programs. First they take discarded computers, tests them, extracts useable parts from computers that are not repairable, and then fixes the ones that can be fixed. The process can be explained as making one working computer from two or three discarded machines. This is shown in following figure.
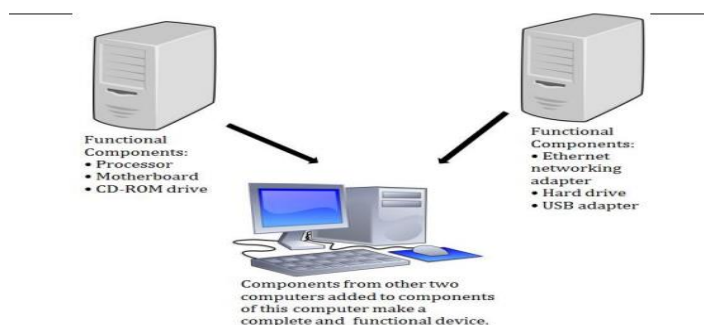
The totally nonworking computers are sent to a recycler. The important part of refurbishing is completely cleaning the machine by formatting all old data and installing the appropriate operating system. The cost of refurbish a computer includes labor, parts, and e-waste disposal also. The process is further categorized as noncommercial refurbishers and commercial refurbishers. **Noncommercial Refurbishing**

Here generally nonprofit and school-based programs doing computer training are involved. Aim is to make refurbished computers and provides them to low-income families. Almost than 70 percent of noncommercial computer reuse is sent to schools. The CompuMentor is an organization that helps to provide PCs and other technology to low-income individuals, along with them there are many such programs available in US.

Commercial Refurbishing

The old computers can sold online using many commercial website, it may be in working or non-working conditions. This can be option for an individual to get rid of old system and earn the money also. Generally major computer companies like HP Financial Services and IBM Global Asset Recovery Services. The noncommercial and commercial programs are also working together for refurbishing process. Example RECONNECT (www.reconnectpartnership.com) is a partnership between Dell and Goodwill Industries. Computers can be brought into Goodwill locations, Dell will refurbish them, and then the repurposed computers are sold with the proceeds going to Goodwill Industries.

c. Give advantages and disadvantages of buying equipment.

ANS:-Buying equipment also comes with its own set of advantages and disadvantages as follows:

 Advantages:

 • **Ease in comparison to leasing:** In leasing bringing in and sending out the equipment's at certain date become headache for the organizational staff. It is very buying only once you have to purchase and then equipment is all ours, no need to return it. Lease terms can also be tricky to negotiate, and we might end up getting unfavorable terms or spending too much

 • **Maintenance is up to you:** Generally leases are used to follow a maintenance schedule established by the leasing company. When we own the computers, we can decide when to defragment hard drives, install operating system updates, and so forth.

 • **Tax deductibility**: If you buy the computers, you can write off the price from your taxes. If you lease, you can only write off the monthly cost.

 Disadvantages:

• **High initial outlay:** If we buy our computers, we will have to spend that money up front from the funds of company. That money could have been used to build the business through marketing, advertising, or something else

 • **You're stuck with it**: With a lease, when the lease term is over and the machines go back to the lease company, disposal becomes the company's problem, not ours. However, when we own the computers, we have to figure out how to recycle or repurpose the machines.

d. Explain how remote desktop server is configured.

Ans:- Remote desktop is a program or an operating system feature that allows a user to connect to a computer in another location, see that computer's desktop and interact with it as if it were local.

When we configure our server for Remote Desktop, we need to enter the user account name when Windows asks for the object name in the Select Users dialog box. To configure a Remote Desktop server, follow these steps:

 Remote Desktop comes pre-installed on any Windows Vista or later computer. The only requirement is that any accounts on the computer that will be accessed remotely must have a password.

 1. To begin the configuration, we must set passwords for any user that will remotely connect. If we already use a password to access our account, we can skip to step 2. If our account does not have a password, click Start | Control Panel | User Accounts. Once there, select our user account, and click Create a password. When we have created a password, close the user accounts window.

2. Click Start | Control Panel and double-click the System icon (click Switch to Classic View on the left side of the Control Panel if we don't see a System icon). On the System Properties window, click the Remote tab or Remote Settings link.

 3. On the Remote tab, place a check in the box next to Allow Remote Assistance connections to this computer (Windows 7).

Note: If we are planning to remotely connect to a computer that is joined to a University of Iowa Active Directory Domain, take note of the Full computer name listed. This is the "hostname" we will need to enter when making the connection from the client (remote) computer.

4.Click the Select Remote users button to add users who can access the host computer remotely. If we need to add additional users, click the Add button, type in the account name, and click OK. Click OK one more time and Remote Desktop will be enabled.

5. We can now connect to the host computer from a remote computer using the Remote Desktop Client.
 Remote Desktop Client

1. Start the Remote Desktop client software on the remote computer (Start | Programs | Accessories | Communications | Remote Desktop Connection on a Windows machine).

2. Select the Options drop-down arrow to review available options and select our preferences. For example, under the Display options tab, we can select the default display size and select multiple monitors for display.

3. Enter our hostname (work computer name) click the Connect button.

4. We should be presented with a log in screen for the host computer. Enter our username and password for the account and click OK.

Note: We may need to enter the domain followed by a backslash (\ ) before the our username in order to log in. We should now be logged in and able to remotely use our computer

e. Explain restriction of Hazardous Substances certification.

Ans:- The Restriction of Hazardous Substances Directive 2002/95/EC, (RoHS 1), short for Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment, was adopted in February 2003 by the European Union.

The RoHS 1 directive took effect on 1 July 2006, and is required to be enforced and became a law in each member state. This directive restricts (with exceptions) the use of six hazardous materials in the manufacture of various types of electronic and electrical equipment.

Any business that sells applicable electrical or electronic products, equipment, subassemblies, cables, components, or spare parts directly to RoHS countries, or sells to resellers, distributors or integrators that in turn sell products to these countries, is impacted if they utilize any of the restricted 10 substances.

RoHS is often referred to as the "lead-free directive", but it restricts the use of the following ten substances:

1. **Lead (Pb)**

2. **Mercury (Hg)**

3. **Cadmium (Cd)**

4. **Hexavalent chromium (Cr6+)**

5. **Polybrominated biphenyls (PBB)**

6. Polybrominated diphenyl ether (PBDE)

7. Bis(2-ethylhexyl) phthalate (DEHP)

8. Butyl benzyl phthalate (BBP)

9. Dibutyl phthalate (DBP)

10. Diisobutyl phthalate (DIBP)

Any RoHS compliant component must have 100 ppm or less of mercury and the mercury must not have been intentionally added to the component. In the EU, some military and medical equipment are exempt from RoHS compliance

f. Define and explain the terms packing and toxins with respect to hardware consideration.

Ans:- **Packaging**

The packaging and shipping are the important aspect in regards with its environmental impact. Generally the computer equipment comes in packaging that cannot be reused or recycled. Multi-material packaging makes recycling difficult, and non-recyclable materials also cause problems.

Following tips can be useful at the time new computers transported to us:

• We can ask for multiple computers to be packaged together for shipping, instead of boxed individually.

• We can ask for recycled-content materials and recyclable packaging for our machines.

• We must know the material types used for packaging because same we have to inform our recyclers. So it is needed a labeling to show what type of plastic is used.

• We can ask for take back packaging for reuse or recycling to manufacturers or shippers.

• We can ask for online manuals and preinstalled programs.

Toxins

There are negative impacts of toxic components of computers when they are at their end of life. We can manage how much toxic material is used by looking for hardware that has been created following these guidelines:

• Going for manufacturers who use low levels of toxic chemicals.

• Going for manufacturers who use lead-free solder.

• Going for manufacturers who use low-mercury and long-life lamps in flatpanel displays.

• Batteries should be removable, rechargeable, and recyclable.

Q.5

a. What is SWAP?

Ans:- (SWaP) Space, Wattage and performance

It is a Sun Microsystems metric for datacenters. It is developed for computing the energy and space requirement of a datacenter.

"SWaP is an objective three-dimensional metric that provides a more comprehensive and realistic way to assess today's servers.

 "Benchmarking the energy efficiency of IT systems can help customers make better purchasing decisions when considering the trade-off ." between the need for greater performance and the rising cost energy and real estate."

• SWaP is still applicable

 • Need to calculate SWaP with a set power limit per sq. ft. of floor space > Convenient to translate to a power/rack

 • Space becomes the effective RU taken by the servers including white space

 • If both servers in a comparison are limited by power and not by the size then SWaP just becomes a measure of Performance Watts

b. Explain groups involved in CRM.

ANS:- For customer you just an organization with some name, without having knowledge of our operation carried out in our company. The customers very well knows that that if they purchase something, someone has to process the payment, package the product for shipping and perform the actual shipping.

The Customer Relationship Management (CRM) is a philosophy of coordinating among all the stakeholders in an organization so that the customer is served well and has the best experience possible being our customer. CRM segregate the people of our organization in the following groups:

• **Customer Facing Operations:** These are the people and technologies a customer experiences when he or she interacts with the company. This can include face-toface interactions, telephone calls, instant messaging, web chats, e-mail, and so forth. This can also include kiosks and web self-service.

• **Internal Collaborative Functional Operations:** These are the people and technologies that support the company policies and back office operations that have a direct impact on the activities of the Customer Facing Operations group. This includes IT, billing, maintenance, planning, marketing, finance, and manufacturing.

• **External Collaboration Functions**: These people and technologies support the organization in its developing of relationships with outside groups. These groups include suppliers, vendors, distributors, lobbying groups, and trade associations.

• **Customer Advocates and Experience Designers**: These are the people and technologies that help deliver value to the customer and profit to the organization.

• **Performance Managers and Marketing Analysts**: These are the people and technologies that design key performance indicators and collect metrics and data that help keep CRM on track. This is the group that establishes milestones and data to determine if the CRM process is being effective.

• **Customer and Employee Surveyors and Analysts**: These are the people and technologies that determine whether customer and employee relationships are getting better or getting worse

c.Explain concept of green supply chain.

Ans:- It is not only the organization which is responsible for protecting the environment and becoming green but the companies from which one is buying parts and services and companies with which one is in business with are also required to be ecologically responsible.

So, one can set minimum standards that its vendors need to follow. For example, Dell has set some standards, and if vendors are not meeting Dell's standard, Dell chooses some other vendor which meets the minimum requirement of Dell. Here, Idea is to select the vendors which are acting in the manner comfortable for organization.

c. Explain prerequisite of VMware.

Ans:- Some of the prerequisites of VMware are :

1. It runs only on Intel Machines (Windows or Linux).

2. VMware will use a lot of RAM. At least 256 MB per virtual server is required. But don't   try to make as many 256MB servers as possible on the physical server. As it will slow down the machine. At the minimum, allocate 1 GB or 2 GB memory per virtualized server.

3. Enough CPU power and disk space should be available per virtual servers as CPU utilization and disk space are affected by number of virtual servers being installed.

d. What is thin client? State its benefits.

Ans:- Thin client is a light weight computer that is built specifically for accessing the remote server. Thin client depends heavily on server for computational tasks. As a part of client replacement strategy; one can replace the conventional PCs (costly, hardware-intensive) with thin client.

Maximization of data center computing capacity is also being implemented in low power supply.

Also old computers (if not have to recycle) can act as thin clients thereby saving money. As all the processing and data storage is done at the server, one can use existing clients as thin clients and deploy all the functions and applications onto the server.

The common green data center initiative is the deployment of multiple virtual machines on a single physical environment. Instead of building redundant data centers with multi-tiered power and cooling requirements, virtualization allowed companies to maintain a single powerful data center running multiple machines. These virtual machines can perform serving tasks for thin client environments. In this way, power consumption can be reduced significantly and at the same time maximization of physical resources can be achieved also.

e. How to sell the CEO.

Ans:- Following are the some ways to sell CEO

- The benefits of going green are not obvious to everyone in the organization especially to CEO. These people in the organization are good at heart and they also know that they should reduce greenhouse gas emission but they are interested in making money.
- So, to convince CEO, one should explain the benefits of going green in terms of monetary benefits. For example, if one is explaining the efficiency using following lines, attention of CEO will get lost at the data center.
- "Changing data center from old rack server to new consolidated blade server (responsible for handling tasks of multiple server using virtualization technology) will be more efficient."
- Rather, explaining the above lines in following way will attract the CEO's ear.
- "Changing old rack servers into new consolidated blade servers will save approximately Rs. 40000 in electrical costs per server per year and by the way data center has 5000 server".