# ICTNWK504 Design and Implement Integrated Server Solution Assessment Task 1 Answer

# ****ICTNWK504 DESIGN AND IMPLEMENT AN INTEGRATED SERVER SOLUTION****

# ****STUDENT ASSESSMENT PACK****

****Unit Assessment Task -1****

****Assessment type:****

* Written Questions

1. Summaries the following authentication method and protocol:

1. Lightweight directory access protocol (LDAP)
2. Kerberos.
3. RADIUS

Write your response in 100-150 words for each.

2. What are the four (4) latest network operating systems (NOS)? Write 30-60 words for each of the network operating system.

3. Summarise the following:

1. Three (3) current server applications
2. Two (2) Windows Server 2016 compatibility issues and their resolution procedures.

Write 100-150 words for each answer.

4. What are the eight (8) types of documentation required for a network?

5. Explain Windows Server error, event logging and reporting. Write your answer in 200-250 words.

6. Summarise the following each in 100-150 words.

1. File Management
2. Print Management

7. Summarise  the following:

1. File System Security

2. Network file system (nfs)

3. Network file sharing.

Write 50-100 words for each.

8. What are the three (3) high availability options for servers? Write 50-100 words for each.

 9. Explain network service configuration and network service security. Write 50-100 words for each.

 10. Explain the operating system help and support utilities.

11. What are the four (4) Windows Server Performance monitoring tools and tuning options?

12. Summarise the following

1. Task Management

2. Task Scheduling utilities

 Write your response in 100-150 words for each.

13. Answer the following questions:

1. What is meant by user authentication? Write your response in 100-150 words.
2. Explain directory services in 100-150 words.

13. Answer the following.

1. List and explain two (2) network troubleshooting tools and techniques. Write your response in 100-150 words.
2. What are the five (5) network diagnostic utilities? Write 30-50 words for each.

14. How to test the server with the return error code 1603 and how to solve this error? Add snapshots.

15. Answer the following questions:

1. What are steps involved in validating changes for a system? Write 100-150 words.
2. How can benchmark testing can optimising the performance of the server? Write your answer in 130-170 words.

16. Answer the following questions:

1. How can firewalls help to implement security for the integrated server environment? Write 100-150 words for each.

2. Explain workstations in 50-100 words.

17. Answer the following Questions:

1. What will you include while documenting server configuration and operational changes? Write your response in 100-150 words.
2. What are the benefits of cleanup and restoration of an ICT worksite as per client’s satisfaction? Write your response in 150-200 words.

18. Answer the following questions:

1. What are the different factors to consider while securing approval of an ICT project? Write your response in 50-100 words.

2. What are the factors to consider while designing a client report? Write your response in 100-150 words.

19. Answer the following questions:

1. What is meant by potential downtime also narrate what is included while preparing a downtime intimation to a client? Write your response in 150-200 words.

2. What is the importance of consultation with the key stakeholders and how does it help to effectively coordinate the task? Write your response in 100-150 words.

20. What is the importance of the Occupational Health and Safety at a workplace? Write your response in 100-150 words.

## Answer

1. Summaries the following authentication method and protocol:

1. Lightweight directory access protocol (LDAP)
2. Kerberos.
3. RADIUS

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| Authentication protocols are the protocols that are used to transfer authenticated data between two devices. There are many authentication protocol that many organizations use for secure communication between two computers in a network. We will discuss the three types of authentication protocols in this section:   1. (LDAP) Lightweight directory access protocol: LDAP was developed for directory services. It is the process in which username and passwords get validation by using directory servers like MS active directory. (Micro Focus International plc, 2019) 2. Kerberos: This protocol is used for a secure communication with the help of a secret-key over a network that is not secure. This protocol provides strong encryption and SSO which stands for single sign on in which users can access the services with a single user ID and password. (Petters, 2018) 3. RADIUS: It stands for Remote authentication dial in user service that operates on 1812 port and provides centralized AAA (Authentication, Authorization and Accounting) for the users who uses network services. (Rouse, 2019) |

Write your response in 100-150 words for each.

2. What are the four (4) latest network operating systems (NOS)? Write 30-60 words for each of the network operating system.

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| Network operating system is an operating system that have additional features of networking. The latest network operating systems are Artisoft’s LANtastic, Novell Netware, Windows NT and Microsoft Windows Server.  Microsoft windows server: Users can access multiple services from Microsoft windows server operating system. It provides administrative control of corporate networks, data storage and applications. In the latest version of Microsoft windows server, active directory is a feature that provides automation in user data management, security management and distributed resources management.  Windows NT: This operating system belongs to family of operating system given by Microsoft. This operating system was produced mainly for servers and workstations. It consists of two parts one is windows NT server that acts as a server in networks and other is windows NT workstation that are used by clients. Windows NT has features of remote management, application support, Remote access services, security etc. (Rouse, Windows-NT, 2019)  Artisoft’s LANtastic: This network operating system supports server, workstations and different PCs. Artisoft’s LANtastic supports windows NT and is user friendly and very fast among other network operating systems. It is easy to maintain and supports many platforms.  Novell Netware: This network operating system is developed by Novell and is designed for local area networks. It can be used in many local area networks like Ethernet, token rings etc. This operating system is highly scalable and supports many client platforms.  (Wisdom IT Services India Pvt. Ltd, 2018) |

3. Summarize the following:

1. Three (3) current server applications
2. Two (2) Windows Server 2016 compatibility issues and their resolution procedures.

Write 100-150 words for each answer.

4. What are the eight (8) types of documentation required for a network?

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| |  | | --- | | 1. Proxy server: Proxy server is a software system  that runs on an intermediary computer between two end devices. The intermediary computer can be any server or any other computer. Proxy server accepts the requests from users and search for the request first in to its local cache and then if the requested page is found in its local cache then it returns reply to user otherwise it forwards the request to internet. (Rouse, Proxy server, 2019)  DHCP server: It is a network server that assigns IP addresses, sub-net mask and default gateway to network users. DHCP server uses DHCP protocol in which server responds to broadcast queries from clients. The IP address assigned by DHCP server is unique dynamic IP address. Router or switch can be used as DHCP server. (Infoblox , 2019)  FTP server: It stands for file transfer protocol server which is used to transfer files between different devices over internet. FTP server makes files or programs available for users from internet.  ****2. Windows server 2016 compatibility issues:****   1. Server core installation option: while installing the server 2016 through server core installation option, print spooler will get automatically installed without any print server role installation. This is one of the compatibility issues in windows server 2016. This issue can be resolved by disabling the print spooler after the first reboot. 2. Start menu: this is another issue that is windows server compatibility issue. The windows server 2016 will be affected by this issue if the server is installed with the desktop experience option. To resolve this issue you have to first logout and then login again. |   Network documentation is very important in the field of networking. It tells about all the requirements and processes from a single switch to firewall, access points etc. In a small network you can manage a network without any documentation but in large network you need to follow network documentation that someday some other may follow and remember you positively. 8 types of documentation required for a network is:  Layer 1 and layer 2 diagram: Layer 1 and layer 2 diagram shows the connections between network devices. Layer 1 diagram shows all the ports of the network devices. All the details of cables used in the network are mentioned in this section.  Layer 3 diagram: It include the routers, switches and firewalls used in the network with valid VLAN ID numbers. The IP address of all the devices are mentioned here. If you are using any redundancy mechanism like HSRP, VRPP, you can mention it here.  IP address allocation table: It includes all the IP addresses used in the network environment. The IP addresses are mentioned in detail along with their sub-net mask, default gateway, interface and sub-network.  Cable plan: This part contains the cable plan so that you can easily understand and use it in future.  Routing Information: It contains information about routing processes and the routing protocol used in the network.  Security diagram: It includes the security structure used in the network. Firewalls used or any other security mechanism like ACL mentioned here.  Network design document: contains the details of all the configuration,cabling so that client can understand it easily.  Routing Snapshot: For large networks it is necessary to include routing snapshot documentation int eh network documentation as it contains all the details of the routing performed on the routers. |

5. Explain Windows Server error, event logging and reporting. Write your answer in 200-250 words.

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| Windows server error: Error in windows server that stops windows server from working properly. Errors in windows server may occur due to many problems or we can say that windows server faces many types of errors for example appearance of blue screen before restarting of windows computer is due to improper shutdown that causes problem in hard drive of windows. These errors can be troubleshoot from the command line interface of windows system and the affected hard drive can be fixed from windows command line interface.  Event Logging: Event logging helps the network administrator to get information about network usage, network traffic and other network conditions. Event logging helps in various other aspects like performance, transparency and security.  Reporting: Reporting includes the reporting of problems faced by any network device, network node, any host when an IP packet is transferred from source to destination. The protocol used to carry message related to any error or issue in network is ICMP (Internet control message protocol). ICMP is categorize in two categories one is error reporting and other is query. When any host machine encounters any issue during packet processing, error reporting messages will get generated. Some error reporting messages are like destination host unreachable, redirection, source quench etc.  On the other hand, query messages are generated when they are requested. Some of ICMP query messages are Address mask request, Time stamp request, echo request etc. |

6.  Summarize the following each in 100-150 words.

1. File Management
2. Print Management

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| File management: The process of managing a system that handles the data files. These data files are stored in a computer. For managing the files in an efficient way, file management system can be used. File management system manages data files in a computer system such as any individual file or any group file. These files contain the records of the office. Records may be an employee data, or any useful information. With an effective file management system files can be retrieved any time with less efforts. With the help of file management system, files can be managed in an accurate way.  Print management: Print management includes the management of print tasks performed in any work flow. Print management include all the tasks related to print. These tasks could be printing, scanning, faxing, and photocopying. All the devices that performed these tasks are managed through print management. Print manager is responsible for print management. Print manager manages the flow of printed materials in a print production company. He/she ensures the quality of the print products met the client requirement and the print products has been delivered on the time. Print management helps you to improve document security as well as environmental sustainability. |

7. Summarize the following:

1. File System Security

2. Network file system (NFS)

3. Network file sharing.

Write 50-100 words for each.

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| 1. File system security: The main responsibility of file system security is to organize the files and directories. The files are organized and stored in a way so that they can be accessed easily. Some of file systems are FAT stands for file allocation table; HFS stands for hierarchical file system. File systems can be secured through access control lists. Another method to secure file systems is by storing the files at different locations or by using the recovery and backup systems. 2. Network File system: This is a client- server application that allows users to store view and update their files on a computer that is located at a different location. The retrieval and storage of data from multiple directories and disks can be performed on a shared network. The user can access the files and make use of them on the remote site like as they are stored locally. 3. Network File Sharing: Network file sharing is the process in which devices on the nearby network can share the files. The network connection is shared by all the devices so that every device can access the network resource. Files can be shared in different ways such as through file transfer protocol program, removable storage media, peer to peer networks etc. |

8. What are the three (3) high availability options for servers? Write 50-100 words for each.

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| High available dedicated server is powerful computer that has high speed internet connection and is used in data centers. The server is equipped with redundant network, redundant power supplies, backups, RAID disk towers so that the server is always available to use in case of any fault or mis happening. Three high available options for servers are:   1. Load balanced dedicated servers: In load balanced dedicated servers the incoming traffic from internet is distributed among multiple servers without any interruption. The appliance, any software or hardware that offers load balancing is called load balance. Load balancing can be performed in different ways like through DNS, software, or hardware. The methods mentioned previously depends on the type of load balancing, type of service and network status. 2. Scalable private cloud: It is a cloud-based solution that offers you self service means you can choose your services according to your business requirements. In other words, we can also say that private cloud offers go as you pay. You only have to pay for the services you want to use in your business. This solution provides high level of security and is ideal solution for large businesses. The main advantages of scalable private cloud are fully redundant platform, enhanced security, privacy, and scalable resources. 3. High availability clusters: This solution has a group of servers that are used in case of any node failure or any server experiences overload. High availability clusters are required in any situation where you need load balancing, backup systems and fail-over servers. Protection against downtime, easy customization, saving downtime cost are some of the advantages of the high availability clusters.  (AccuWebHosting, 2019) |

9. Explain network service configuration and network service security. Write 50-100 words for each.

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| Network Service configuration: In computer networking there are various network services. Some of them are directory services, file sharing, File server, printing, email, instant messaging etc. Network services are configured from the network service configuration page in WVA web interface. The common network services can be enabled or disabled from this page. You can configure the network port on which the services are available.  Network Service security: Network service security means securing the network services from any cyber attack. In any organization security is the common concern for the safety of their business data. Email services can be secured through email security. Use of firewall secures network services. Firewall filters the incoming and outgoing traffic and blocks the traffics that is suspicious. |

10. Explain the operating system help and support utilities.

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| Operating system controls the computer system and allow a user to use the computer. It controls the operating system and act as an interface to use multiple applications. It is a software that is used by every computer, without operating system the computer is of no use. Operating system manages the processes, memory, software and hardware of the computer. It tells the user how to communicate with the computer as human does not know the machine language.  Utility programs are the programs that helps in managing, maintaining, and controlling the computer resources. Some of the utility programs used in the computer system are backup software, antivirus software, disk tools etc. Antivirus programs helps the user to protect its computer system from the virus. |

11. What are the four (4) Windows Server Performance monitoring tools and tuning options?

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| Windows server performance monitoring tools are responsible for monitoring servers and network equipment, identifying devices, representing monitoring results, backing up switch and router configurations. Below are some windows server performance monitoring tools discussed:   1. Nagios: The most powerful network monitoring tool is Nagios. This tool is written in C language. The server part of this tool is extremely reliable, and the web interface part is intuitive and fast. With the help of this tool you can monitor the status of the network channels, servers, services etc. You can monitor how much RAM is used by servers, disk space, and CPU usage through this tool. 2. Cacti: It is free monitoring tool that can be downloaded from internet. It is included in Linux, Apache, MySQL, and PHP suite. LAMP suite provides a software platform where graphs based on statistical data can be created. Cacti data can be collected from SNMP protocol and scripts in PHP or scripts in Perl. 3. Icinga: It is an open source monitoring tool. The main difference between Nagios monitoring tool and Icinga monitoring tool is that Nagios is configured through command line and uses configuration files while Icinga is configured through web interface. 4. Ntop: Ntop monitoring tool has an easy and fast web interface. With the help of this monitoring tool, network traffic can be monitored. All the details about host connections and host data can be monitored with this tool. Along with current network traffic, the old network traffic can be shown in the graph that is given by Ntop tool. (Melnick, 2018) |

12. Summarize the following

1. Task Management

2. Task Scheduling utilities

 Write your response in 100-150 words for each.

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| 1. Task Management: It is the process to manage tasks on the daily basis. For an efficient work flow, it is necessary to mange the tasks according to the level of their importance. Task management makes it easy to manage a large amount of tasks in a good manner with less errors. It is fact that no one can manages large amount of tasks at one time. Task management helps you to prioritize the tasks that are more important ans needs to be completed first. It reduces the time that is required to set priorities and enable us to differentiate between the tasks which task is more important and which task is less important. 2. Task Scheduling utilities: Task scheduling is the scheduling of tasks to be performed automatically at the scheduled time. It is located in the system. Task scheduling activity is present in the process scheduling where you can add, edit, delete, enable, disable and restore the task.  With add, edit, delete task option you can manage your tasks. Enable task is used to enable the disabled task. In the same way disable task is used to disable the enabled task. The task stops to be scheduled in scheduler. Restore task is used to reset the task status that has stopped working but still in the running state. |

13. Answer the following questions:

1. What is meant by user authentication? Write your response in 100-150 words.
2. Explain directory services in 100-150 words.

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| 1. User authentication: It is the process in which a device is able to verify the identity of user. It verifies the credentials required for authenticity of the user while communicating from human to machine. Traditionally, user authentication was performed through simple ID and password. Some authentication factors are knowledge factors, possession factors and inference factors. knowledge factor consists of the information a user should possess to login username, ID passwords and pin numbers. Possession factors include the things that a user should have to login. One-time password, employee ID cards falls under this category. Inference factors include inherent traits like fingerprint scans, retina scans, voice recognition etc.  (Rouse, user-authentication, 2019) 2. Directory services: it is a customize able information store or a software system that act as a single point where users can access the resources without knowing the physical location of the device. Administrators can manage objects and their attributes through a single point. Every resource like email address, computers connected in the network, peripheral devices are identified by directory services and make these resources available to users. Directory services like naming services map the name of the network resource to the network address of that resource. It is the main component of network operating system. The most used directory services are lightweight directory access protocol used for email addresses and Novell Net ware networks use Net ware directory service. |

13. Answer the following.

1. List and explain two (2) network troubleshooting tools and techniques. Write your response in 100-150 words.

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| Network troubleshooting tools and techniques:   1. SNMP monitoring tools: SNMP stands for simple network monitoring protocol. It helps network engineers to troubleshoot the network issues. When any network device or node goes down, this tool notifies the network engineers by triggering an alarm which are set up by network administrator. Once network engineers get notification from the monitoring tool, they quickly try to find the root cause of the issue generated. 2. Protocol analyzer: protocol analyzer helps the data administrator when they are troubleshooting the difficult network issues. With the help of protocol analyzer, packets can be analyzed from close and the network administrator can view the interaction between client and server. (Froehlich, 2017)   Five network diagnostics utilities:   1. Ping: Ping command is used to check whether one computer in a network is able to communicate with another computer on the network. It checks the ability of the source computer to reach the destination computer. Ping command can be used from command prompt or terminal of a network device. 2. Traceroute: traceroute command is used to trace the route of network packet. It tells the details of the path through which packet travels. It tells the user whether the packet is successfully reached to its destination or not and if any error occurs in mid of the path, user can get information about where the packet gets dropped. 3. Ping scan: This utility scans the range of IP addresses that are accessible. Ping scan utility results the IP address, DNS name and response time of the device found. The scanning is performed by using the ping command. 4. SNMP scan: It checks the range of IP addresses for verifying whether SNMP is enabled or not. Like in the ping scan, this utility also results the IP address, System name, system type, response time etc. 5. SNMP ping: This utility is used to check an IP whether SNMP is enabled or not on that IP. It tells the network administrator about the availability of the network device. It also results the output like system name, system type, IP address, DNS name. |

1. What are the five (5) network diagnostic utilities? Write 30-50 words for each.

14. How to test the server with the return error code 1603 and how to solve this error? Add snapshots.

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| the error code 1603 will receive due to one of the reason -  - trying to install an application that is already installed on the system  - the installation folder is encrypted or inaccessible  - the installation drive is not accessible  - the installation account does not have full rights to make the changes to the system  To resolve this error one need to do the below steps -  - check for the application if it is not already installed  - the installation folder is not encrypted and available for the install operation  - the installation drive is accessible and have enough space to complete the installation  - the install user account has full access rights to do the installation  The error message will look like the figure given below -  IMG_256 |

15. Answer the following questions:

1. What are steps involved in validating changes for a system? Write 100-150 words.
2. How can benchmark testing can optimizing the performance of the server? Write your answer in 130-170 words.

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| 1.  Change validation for a system is a set of actions that are used to check the compliance of a changes in a system. It is an automated process to check the changes made to the system are sensible and reasonable.  The steps involved in validation of the changes are -  - identify the changes  - taking advice for the change  - create a layout  - implement the changes  - test the changes  2.  Benchmark testing helps the server administrator to monitor the server resources, resource utilization, performance optimization and identify the problems before they can arise. It also test the capability of the application by analyzing it with different factors. Benchmark testing checks the load that an application can handle to maintain performance of that application in a heavy load environment. It is a repeatable process that repeatedly test the load and performance and also compare the characteristics with others to maintain the competitive advantages. The benchmark testing has mainly two goals -  - it test the system for the changes made. How the change can affect the performance of a system or application  - after testing the performance characteristic, it also fine tune the system to meet the performance level |

16. Answer the following questions:

1. How can firewalls help to implement security for the integrated server environment? Write 100-150 words for each.

2. Explain workstations in 50-100 words.

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| 1. Firewalls help a lot in securing the network of an organization. The main function of firewall is to filter the incoming and outgoing traffic. When it comes to security, every organization thinks of the firewall. Firewalls are designed to protect the organization network from unauthorized users and traffic. Firewall can be a hardware or software; it depends on the requirement of your business. The firewalls that are software based are built in the operating system or in the antivirus software. This blocks the traffic that could harm the data of your device. Hardware based firewalls are implemented in the network that filters the incoming and outgoing traffic and blocks the suspicious traffic. 2. Workstations: workstations are the computers used by a user or a group of users for their professional work. These are faster than the ordinary personal computers. These includes faster processor and high-speed resolution. These workstations are connected to LAN. As the workstations are used for technical or scientific purpose, so they have large memory than the ordinary personal computers. |

17. Answer the following Questions:

1. What will you include while documenting server configuration and operational changes? Write your response in 100-150 words.

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| 1. Documenting server configuration and operational changes. Documentation of any process is important for every business person because it saves your time and protects your data. By documenting the server configuration a server administrator can save his/her time in future while configuring the server in future. He/she can simply go through the steps and by following these steps he/she can easily configure the server. The things that are included in the documentation of server configuration are: IP addresses of each server. Client agents  Software inventory Client installation methods Configuration of all the components  Database maintenance Site system Network discovery Logon settings 2. Benefits of cleanup and restoration of an ICT worksite:  Clean work environment keeps the employees clean and hence healthy and a healthy employee can benefits the organization in a more good way than the unhealthy employee. Organizations with clean workplace are able to protect and preserve the company assets and resources up to a long time. Clean workplace attracts more clients and is beneficial in marketing field. If the workplace is clean the employees remain healthy and active and hence improve the productivity of your business. |

1. What are the benefits of cleanup and restoration of an ICT worksite as per client’s satisfaction? Write your response in 150-200 words.

18. Answer the following questions:

1. What are the different factors to consider while securing approval of an ICT project? Write your response in 50-100 words.

2. What are the factors to consider while designing a client report? Write your response in 100-150 words.

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| 1.  We need to consider both success and failure factors while securing approval of an ICT project. Both these factors are reversely affects each other. That means the presence or absence of a factor will lead the project to success or failure.  Some factors that need to be consider, are -  - strategy and vision  - support  - customer expectations  - infrastructure  - technological changes  - project coordination and management of change  - skills of persons involved. Etc.  2.   1. Factors to be considered while designing a client report: 2. Before writing a client report, first create report timing, content at the start of your client report. 3. In report, write down the strong summary because sometimes senior level clients does not have enough time to read the complete report so it is the best way the summarize the report strongly so that the client can understand the overall content of the report without going through the complete report. 4. Keep your report up to the point. Do not increase the length of report by adding extra data that is not necessary. 5. Write the report with full accuracy and error free. 6. Write the report according to the culture of your client but it should reflect your products. 7. Write your report according to requirement of your audience. |

19. Answer the following questions:

1. What is meant by potential downtime also narrate what is included while preparing a downtime intimation to a client? Write your response in 150-200 words.

2. What is the importance of consultation with the key stakeholders and how does it help to effectively coordinate the task? Write your response in 100-150 words.

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| 1.  A downtime is a period when a computer or server will become unavailable for some period of time.  Any system go through a downtime for a number of reasons such as power failure, shutdown, system update, reboot or server crash and many more.  For a pre planned downtime, the client needs do be pre informed by the server or system administrator. When an administrator intimate the client, the specific information are need to include in the intimation message -  - the importance and need of downtime  - why we need to take down the server or systems. Maintenance, new services, updation or something  - what new features are there after this update. Etc  2.  A stakeholder is one of the important member in an organization. Consulting the stakeholder will enable us to monitor trends, expectations, risks, challenges and value of the implementation or product. It also helps us in decision making with greater satisfaction of the outcome. This lead to a good chance of successful implementation by analyzing the pros and cons of the implementation with the different stakeholders. It symbolize a good transparency and governance. |

20. What is the importance of the Occupational Health and Safety at a workplace? Write your response in 100-150 words.

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| Occupational health and safety are important at a workplace as it ensures the safety of the employees at workplace. Every employer must ensure that the workplace is safe for all the employees of his/her organization. A healthy mind gives more productivity and profit to the organization. Every organization or company has several kinds of risks according to their business and due to this employer needs to find the ways to secure the employees from these risks. If an employer will not look after the needs and safety of employees, employees will not do that much benefit or output to the organization. If the organization does not implement any health and safety measures, it will cost the organization. |