**PC 4113 SYSTEM ADMINISTRATION AND MAINTENANCE**

MID-TERM EXAM

Directions: Answer comprehensively

Provide a detailed Job Description and Key Responsibilities to the following:

1. System Administrator
2. Network Administrator
3. Server Administrator

**a. System Administrator**

**Job Description**:

The System Administrator has the responsibility to control, preserve, and guarantee the optimal cooperation of an organization’s computer systems, servers, and networks. These people are in charge in the day-to-day operations of IT infrastructure that supports the business, troubleshooting issues, and making sure that all the systems are secure, stable, and running efficiently. The job needs foresight and the capability of multitasking while upholding an IT environment that is seamless.

**Key Responsibilities**:

* **System Maintenance and Monitoring**: Regularly monitor all computer systems, servers, and network devices to ensure optimal performance. Immediately solve all defects or system warnings to minimize waste of time.
* **Software Installation and Updates**: Install, configure, and update software applications and operating systems, which must be the last ones that have run successful security patches and updates.
* **Troubleshooting and Problem Resolution**: Diagnose and fix hardware and software issues at the company. Give first-level assistance and respond to the user's question by providing them with IT support.
* **Data Backup and Recovery:**  Implement and operate data backup control and recovery plans. Anyhow, the process of frequent data backup is here, and then the data will be able to be restored when lost.
* **User Access Management**: Monitor login rights, permissions, and user access to ensure that everyone is in a position to fulfill their duties safely. At the same time, system integrity is preserved.
* **Documentation and Reporting**: Keep careful notes of the system configurations, the changes made, and the maintenance activities carried out in the records. Write system performance and incidents reports thereby, make known the experiences to help the future program processes.
* **System Security and Compliance**: Direct the use of security protocols for data protection while ensuring to comply with the regulations. Not only the latter, but this also guarantees the security of the process, by utilizing all necessary security control mechanisms such as the antivirus program, firewalls, and access controls
* **Capacity Planning**: Prediction and designing capacity for future needs. Be able to recognize the imperfections in existing infrastructure and provide useful advice for the process of optimizing the system.

**b. Network Administrator**

**Job Description**:

The Network Administrator devotes his or her time to guaranteeing that the company network is tough, secure, and trusty. This job's mission includes the installation, support, troubleshooting of such network devices as routers, switches, firewalls, and wireless systems. Network Administrators have a significant role in the development of the company through the provision of network support, the flexibility of communication channels, and increasing productivity and sustainability.

**Key Responsibilities**:

* **Network Setup and Configuration**: Install and configure the network hardware and software such as routers, switches, and wireless systems which ensures the network is operational as planned.
* **Monitoring and Performance Optimization**: Use network monitoring tools for the view coverage of network traffic and devices, pinpoint plenty dealers and empty spaces of improvement associated with the network.
* **Troubleshooting and Issue Resolution**: Resolve and investigate some network issues that affects the network’s connectivity like packet loss, latency, and network outages.
* **Network Security Management**: Manage and applies the network security protocols to protect data from unauthorized access and cyber threats such as firewalls, VPNs, intrusion detection/prevention systems, and network segmentation.
* **Documentation and Network Diagrams**: Create documentations that are important for troubleshooting and future planning of the network. Documentations such as network diagrams, configuration details and device inventories.
* **Capacity Planning and Scalability**: Monitors the network traffic and usage patterns to know if the network is scalable and plans the capacity to accommodate future demands.
* **Vendor Management**: Manage the third-party vendors and service providers to help them troubleshoot issues, manage contracts, and monitor the implementation of external services and hardware.
* **Training and User Support**: Educate and provide support for users on network usage, access policies, and security protocols which will help them understand best practices and stay productive.

**c. Server Administrator**

**Job Description**:

A Server Administrator is the individual who is in charge of the entire process of setting up, maintaining, and finally ensuring the performance of the organization's server environment. They accomplish this by running both physical and virtual servers ensuring that they are secure, and implementing high-availability solutions to support business-critical applications. The job is made for handling issues, such as making servers predictable, always in action, and actual, requiring team work with other IT teams for structural goals.

**Key Responsibilities**:

* **Server Setup and Configuration**: Install and configure both physical and virtual servers based on the organization’s needs. Server systems, applications, and other relevant configurations need to be manageable to them so they could perform better.
* **Performance Monitoring and Optimization**: It is necessary to regularly check the server working, receiving ability, and the capacity. Discover and cure performance problems, the nonstop operation of servers the preparation for increased demand.
* **Backup and Recovery Management**: The task is to develop, implement, and then test backup and disaster recovery plans for all critical server systems. Ensure there is correctness and also readily recover the server in case a hardware failure or other in our supply occurs.
* **Security and Compliance**: To protect the servers by using the software, implement the security protocols. Periodically, you can apply patches for security protection, as well as set mode access permissions, and also do vulnerability assessments.
* **Patch Management and Updates** Continuously, keep the servers up-to-date with the latest OS and software patches. Running maintenance procedures at regular checked intervals, we can inform users about downtimes as they happen.
* **Automation and Scripting**: Automation tools and scripts are used to standardize these management operations. Publish smart code and adapt them to the routine task for time-saving.
* **Documentation and Reporting**: The gathering of server configurations, maintenance activities, and incidents is done in detail. At the same time, the issuance of performance reports and the detection of patterns that may impact the stability of the server and its performance are required
* **Collaboration and Support**:  Collaborate with other IT groups such as the Systems and Network Administrators, for the best IT infrastructure management. Share the solutions to the problems that cannot be resolved by other techies and also offer advice on the practice