1. Describe the role of audit of an information system in an organization.

→ The role of an audit of an information system in an organization is to assess and evaluate the effectiveness, efficiency, and security of the organization's information technology (IT) infrastructure, processes, and controls.

Some key aspects of the role of an audit of an IS are as follows:

1. Risk assessment:
- The audit begins with a comprehensive risk assessment to identify potential vulnerabilities, threats and risks associated with the organization's IS.

- This helps in determining the scope and focus of the audit process.

2. Compliance Verification:
- The audit verifies whether the organization's IS complies with relevant laws, regulations, industry standards, and internal policies.

3. Security Evaluation:
- The audit assesses the security measures implemented within the IS, including ~~nen~~ network security, access controls, authentication mechanisms, data encryption, etc.

- It aims to identify vulnerabilities or weakness in the system's security architecture and recommend improvements to mitigate risks.

4. System Performance and Efficiency:
- The audit evaluates the performance and efficiency of the IS, including its hardware, software, and network components.

5. Controls Assessment:
- The audit examines the effectiveness of internal controls implemented within the IS.

- This includes reviewing policies, procedures, and protocols for data integrity, change management, backup and recovery, etc.

6. Business Continuity and Disaster Recovery:
- The audit assesses the organization's plans and strategies for business continuity and disaster recovery in the event of system failure, natural disasters, or other disruptive incidents.

7. Governance and Management:
- The audit evaluates the governance and management practices related to the IS.

- This includes assessing the IT organizational structure, roles and responsibilities, IT policies and procedures, project management practices, and IT governance frameworks.

8. Audit Trial and Monitoring:

- The audit reviews the system's logging and monitoring mechanisms to ensure that appropriate audit trials are in place.

2. Explain the details of EMS and what is the role of EMS for beneficial organizations? Give example.

→ - EMS stands for Environmental Management System.

- It is a structured framework that organizations use to manage and continually improve their environmental performance.

- An EMS provides a systematic approach for identifying, measuring, monitoring and controlling an organization's environmental impacts, as well as setting and achieving environmental objectives and targets.

The role of an EMS for beneficial organizations are as follows:

1. Environmental Compliance:

- An EMS helps organizations ensure compliance with applicable environmental laws, regulations and standards.

- By establishing processes and procedures to monitor and control environmental aspects, an organization can minimize the risk of non-compliance and potential legal and financial liabilities.

2. Resource Efficiency and Cost Savings:
- Implementing an EMS allows organizations to identify opportunities for improving resource efficiency and reducing waste generation.

- By adopting practices such as energy conservation, water management, and waste reduction, organizations can minimize their environmental footprint and achieve cost savings through reduced resource consumption.

3. Reputation and Stakeholder Trust:
- Organizations that demonstrate a commitment to environmental management through an EMS can enhance their reputation and build trust among stakeholders.

4. Risk Management:
- An EMS helps organizations identify and manage environmental risks associated with their operations.

5. Continuous Improvement:
- One of the core principles of an EMS is the concept of continuous improvement.

Example:
Let's consider an example of a manufacturing company that implements an EMS. The company identifies that its production processes contribute to significant energy consumption and greenhouse gas emissions. By implementing an EMS, the organization

sets ~~im~~ environmental objectives and targets to reduce energy consumptions and emissions.

To achieve these objectives, the company conducts an energy audit to identify areas of energy wastage and implement energy saving measures such as upgrading equipment, optimizing production schedules, and improving insulation in buildings. They also establish monitoring systems to track energy consumption and emissions regularly.

As a result of these efforts, the company experiences a reduction in energy costs, as well as a decrease in its carbon footprint. The EMS helps the organization monitor its progress towards the objectives and targets, identify furthur opportunities for improvement, and communicate its environmental performance to stakeholders. This, in turn, enhances the company's reputation, builds trust among customers and investors, and positions it as a responsible and sustainable organization.

3. What do you mean by System Security? What are basic criteria before an audit of firms for audit planning?

→ System security refers to the protection of ISs from unauthorized access, use, disclosure, disruption, modification, or destruction.

- It ~~im~~ involves implementing a combination of technical, procedural, and administrative measures to safeguard the confidentiality, integrity, and availability of data and resources within an organization's IT infrastructure.

The basic criteria before conducting an audit of firms for audit planning include:

1. Understanding the organization:
- The auditor needs to have a comprehensive understanding of the organization's business processes, operations, industry-specific regulations, and risk factors.

- This includes gathering information about the organization's goals, strategies, policies, procedures, and IT infrastructure.

2. Identifying objectives and scope:
- The auditor should clearly define the objectives and scope of the audit engagement.

- This includes determining the specific areas and focus, such as system security, compliance, data protection, etc.

3. ~~As~~ Assessing Risks:
- The auditor needs to identify and evaluate the risks associated with the organization's IT systems and processes.

- This involves conducting a risk assessment to identify

vulnerabilities, threats, and potential impacts.

4. Establishing Audit Criteria:
- Audit criteria define the standards, guidelines, or benchmarks, against which the auditor will assess the organization's IT systems and controls.

- These criteria may include industry best practices, regulatory requirements, internal policies, or specific control frameworks such as ISO 2700 (Information Security Management System) or NIST (National Institute of Standards and Technology) cyber security frameworks.

5. Developing an Audit Plan:
- The auditor creates a detailed audit plan that outlines the audit approach, methodology, timelines, resources required, and specific audit procedures to be performed.

- The plan considers no organization's objectives, risks, and the availability of information and resources.

6. Obtaining Access and Permissions

7. Team Composition and Expertise

8. Communication and Coordination

4. Explain the ERP with details. Advantages of ERP.

→ - ERP stands for Enterprise Resource Planning.

- It is a comprehensive and integrated software system that enables organizations to streamline and automate their core business processes across various functional areas such as finance, human resources, procurement, inventory management, sales and customer relationship management.

- ERP systems provide a centralized database and a suite of modules that facilitate efficient data management, real-time information sharing, and process automation throughout the organization.

Key aspects and advantages of ERP:

1. Integration of Business Processes:
- ERP integrates and consolidates diverse business process and functions into a unified system.

- It eliminates data silos and allows seamless flow of information across departments, enabling better coordination, collaboration, and decision-making.

2. Real-time Data and Reporting:
- ERP system provide real-time access to accurate and up-to-date data.

- This enables management to make informed decisions based on accurate information, improve forecasting, and respond quickly to changing business conditions.

3. Process Automation and Efficiency:
- ERP automates routine and repetitive tasks, reducing manual effort, minimizing errors, and improving process efficiency.

4. Enhanced Productivity and Collaboration:
- ERP systems provide a centralized platform that promotes collaboration and enhances productivity.

- Employees across departments can access relevant data, documents, and information from a single source, eliminating the need for manual data exchange or communication gaps.

5. Improved Customer Service:
- ERP systems include modules for managing customer relationships and interactions.

- This allows organizations to store and track customer data, manage sales leads, track orders, and provide timely and personalized customer service.

6. Scalability and Flexibility

7. Regulatory Compliance

8. Cost Savings

5. What is collaborative filtering?

→ - ~~It~~ Collaborative filtering is a technique used in recommender systems to make predictions or recommendations by leveraging the preferences and behaviour of similar users.

- It is based on the idea that users who have similar taste or preferences in the past are likely to have similar preferences in the future.

The process of collaboration filtering involves two main steps:

1. Data collection:
- The first step is to gather data on user preferences or behaviour.

- This data typically includes information such as user ratings, reviews, purchase history, clicks, or any other relevant interactions with items or content.

- The more data available, the better the recommendations are likely to be.

2. Recommendation Generation:
- Once the data is collected, collaborative filtering algorithms are applied to generate recommendations.

There are two primary types of collaborative filtering.

(i) User - Based Collaborative Filtering
(ii) Item - Based Collaborative Filtering

Advantages:

1. Personalized Recommendations:
- Collaborative filtering enables personalized recommendations by considering the preferences and behaviours of similar users.

- It helps users discover new items or content that align with their interests and preferences, leading to a more engaging and satisfying user experience.

2. Serendipitous Discovery:
- It can uncover new items or content that users may not have discovered on their own.

- By recommending items liked by similar users, it includes diversity and helps users explore new options.

3. User Independence:
- Collaborative filtering does not require explicit user profiles or demographic information.

- It can make recommendations solely based on the behaviors and preferences of similar users, respecting user privacy and

allowing for anonymous usage.

4. Cold Start Problem Mitigation:

- It can address "cold start" problem, which occurs when there is limited or no data available for new users or items.

- By leveraging the behavior of similar users or items, it can make recommendations even for users or items with limited data.

6. What do you mean by security?

→ - Security refers to the state or condition of being protected from harm, threats or risks.

- In the context of IT and IS, security encompasses measures and practices implemented to safeguard data, systems, networks, and resources from unauthorized access, ~~misue~~ misuse, damage, theft or disruption.

- The goal of security is to ensure the confidentiality, integrity and availability of information and resources, while also protecting against potential risks and threats.

Some key aspects and components of security are as follows:

1. Confidentiality :
- It ensures that sensitive information is accessible only to authorized individuals or entities.

- It involves measures such as encryption, access controls and secure communication protocols to prevent unauthorized disclosure or access to data.

2. Integrity :
- It ensures the accuracy, consistency, and trustworthiness of information and data.

- It involves mechanisms to prevent unauthorized modification, alteration, or corruption of data.

- Techniques such as data validation, checksums, and digital signatures are used to maintain data integrity.

3. Availability :
- It ensures that information, systems and resources are accessible and usable when needed.

- It involves measures to prevent downtime, service disruptions, or denial of access due technical failures, cyber attacks, or other incidents.

- Redundancy, backup systems, and disaster recovery plans are used to maintain availability.

4. Authentication:
- It verifies the identity of users or entities attempting to access systems or resources.

- It involves the use of credentials, such as passwords, biometrics, or digital certificates, to validate the identity of users and grant appropriate access privileges.

5. Authorization:
- It ~~controls~~ determines the permissions and privileges granted to authenticated users.

- It involves defining access levels, roles and permissions to ensure that users can only access the resources and perform the actions that they are authorized to.

6. Network Security:
- It focuses on protecting the organization's networks from unauthorized access, attacks, or disruptions.

- It involves measure such as firewalls, intrusion detection systems, virtual private networks (VPNs), and secure network configurations to secure network infrastructure and prevent unauthorized access or data breaches.

7. Physical Security:
- It encompasses measures to protect physical assets, facilities, and equipment from theft, damage, or unauthorized access.

- This includes physical access controls, surveillance systems, secure storage, and environmental controls to ensure the safety and security of physical resources.

7. Differentiate between OLAP and OLTP.

→

Category	OLAP	OLTP
Definition	It is well-known as an online database query management system.	It is well-known as an online database modifying system.
Full form	It stands for Online Analytical Processing.	It stands for Online Transaction Processing.
Data-source	It consists of historical data from various databases.	It consists of only operation current data.
Method used	It makes use of a data warehouse.	It makes use of a standard database management system
Application	It is a subject-oriented for data mining, analytics, decision making, etc.	It is application-oriented used for business tasks.
Normalized	In an OLAP database, tables are not normalized.	In an OLTP database, tables are normalized

Category	OLAP	OLTP
Usage of data	The data is used in planning, problem saving and decision-making.	The data is used to perform day-to-day fundamental operations.
Task	It provides a multi-dimensional view of different business tasks.	It reveals a snapshot of present business tasks.
Purpose	It serves the purpose to extract information for analysis and decision-making.	It serves the purpose to insert, update, and delete information from the database.
Volume of data	A large amount of data is stored typically in TB, PB	The size of data is relatively small as historical data is achieved in MB and GB.
Queries	Queries may take hours.	They are very fast.
Update	The OLAP database is not often updated. As a result, data integrity is unaffected.	The data integrity constraint must be maintained in an OLTP database.

8. Suppose you are assigned CRM manager to manage customer relations job of an online business which have no any physical showroom. What will be your plan to convert and retain your customer?

→ - As a CRM (Customer Relationship Management) manager for an online business without a physical showroom, my primary focus would be on creating a seamless and personalized customer experience to drive customer conversion and retention.

- Here is a plan outlining the key strategies and activities I would undertake:

1. Customer Data Management:

(i) Implement a CRM system to centralize and manage customer data effectively.

(ii) Collect and analyze customer information including demographics, purchase history, preferences, and interactions with the website or app.

(iii) Develop a comprehensive customer profile to understand individual needs and preferences.

2. Personalized Communication:

(i) Utilize email marketing campaigns.

(ii) Send relevant product recommendations, promotions, or discounts

tailored to each customer's interest.

(iii) Implement marketing automation based on customer actions.

3. Enhanced Customer Support:
(i) Provide multiple channels for customer support such as chat, email, phone, etc.

(ii) Implement a ticketing system.

(iii) Train customer support representatives.

4. Loyalty Programs and Incentives:
(i) Create a customer loyalty program that offers rewards, discounts, benefits.

(ii) Encourage customer engagement.

5. Personalized Product Recommendations:
(i) Utilize data analytics and machine learning algorithms.

(ii) Display recommended products recommendations.

6. Social Media Engagement

7. Continuous Improvement

8. Customer Retention Campaigns

9. Referral Programs

10. Continuous Monitoring and Analysis

9. Write a short notes on EMS / CRM / SCM.

→ SCM:

- It stands for Supply Chain Management.

- It refers to the strategic coordination and integration of all activities involved in the procurement, production, and distribution of goods and services.

- It encompasses the entire network of organizations, resources, activities, and information flows that enable the movement of products or services from suppliers to customers.

- The primary objective of SCM is to optimize the flow of materials, information and finances across the supply chain, ensuring that the right products are available at the right place, at the right time, and in the right quantity, while minimizing costs and maximizing customer satisfaction.

- SCM involves a range of activities; including:

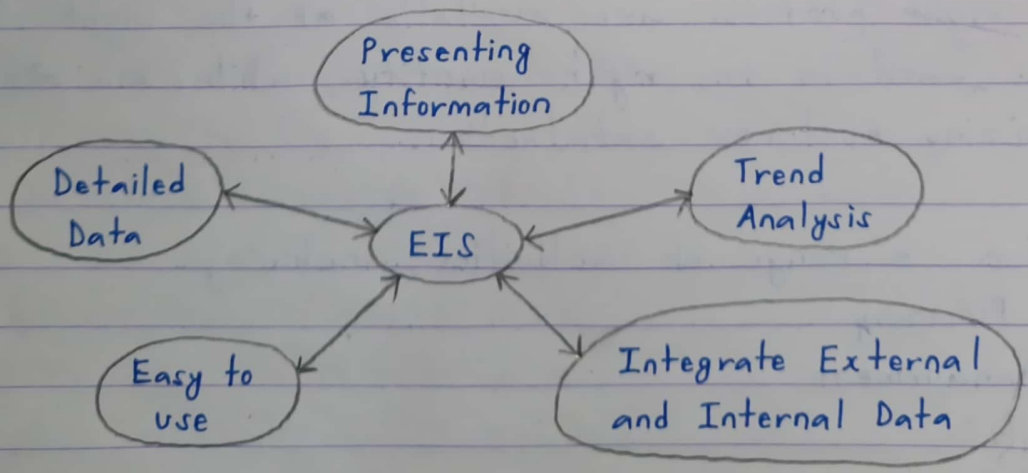
(i) Strategic Planning
(ii) Supplier Management
(iii) Procurement

(iv) Inventory Management
(v) Production and Operations Management
(vi) Logistics and Transportation
(vii) Information Systems and Technology
(viii) Risk Management
(ix) Sustainability and Ethics

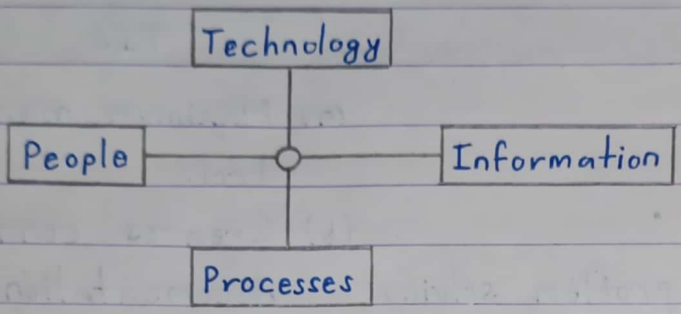
Benefits:
(i) Improved Customer Service
(ii) Cost Reduction
(iii) Increased Efficiency and Productivity
(iv) Enhanced Collaboration and Communication
(v) Competitive Advantage
(vi) Risk ~~Migit~~ Mitigation

10. What are the difference between traditional (information system and Enterprises information system?

→ Enterprises Information System (EIS):



Traditional Information System (TIS):



S.N.	EIS	TIS
1.	It is handled by top level of management.	It is handled by lower staff.
2.	Information is provided by online tools and analysis.	Information is provided by offline status reporting.
3.	Information sources are more external and less internal.	Information ~~systems~~ sources are internal.
4.	It is user-friendly.	It is computer operator generated.
5.	Information comes in the form of text with graphics.	Information comes in the form of table.
6.	Facility to go through details at successive levels is available.	Facility to go through details at successive levels is not available.

Advantages:

EIS	TIS
(a) It is easy to use.	(a) Maximum management control.
(b) It is efficient.	(b) Creates connected system documentation.
(c) Time management	
(d) Enhances business problem solving	

Disadvantages:

(a) Functions are limited.	(a) Documentation is expensive.
(b) Difficult to keep current data.	(b) Time consuming
(c) System can run slow.	
(d) Less reliable.	

11. Discuss on multilayered security strategy on live example of E-commerce.

→ - A multilayered security strategy is crucial for E-commerce platforms to protect sensitive customer information, secure transactions, and maintain trust.

- Let's explore different layers of security and how they apply to an E-commerce scenario:

1. Secure Network Infrastructure:
- Utilize firewalls, intrusion detection and prevention systems (IDPs), and secure routers to protect the network from unauthorized access and external threats.

- Implement secure configurations, regular patching, and updates to mitigate vulnerabilities in network devices and infrastructure.

2. Robust Authentication and Access Controls:
- Implement strong authentication mechanisms such as two-factor authentication (2FA) or multi-factor authentication (MFA) for user accounts, preventing ~~a~~ unauthorized access even if passwords are compromised.

- Enforce strong password policies, including complexity requirements and regular password resets.

3. Secure Payment Processing:
- Use encryption to secure payment card data during transmission and storage, minimizing the risk of card holder data breaches.

4. Regular Security Assessments and Testing:
- Conduct regular vulnerability assessments and penetration testing to identify and address any weakness in the E-commerce platforms infrastructure, applications, or configurations.

5. Data Encryption and Privacy Protection:
- Encrypt sensitive customer data, such as personally identifiable

information (PII), stored in databases or during transit.

6. Secure Hosting and Infrastructure:
- Host the e-commerce website on secure and reputable hosting platforms that provide features like secure data centers, regular backups, disaster recovery plans, and high availability.

7. Educate and Train Employees:
- Provide security awareness training to employees to educate them about phishing attacks, social engineering, and best practices for secure browsing, password management and handling sensitive customer information.

12. What is the role of CRM system in an enterprise management system?

→ The role of CRM system in an enterprise management system are as follows:

(i) Customer Data Management
(ii) Customer Interaction Tracking
(iii) Sales and Opportunity Management
(iv) Marketing Campaigns and Lead Generation
(v) Customer Service and Support
(vi) Analytics and Reporting
(vii) Collaboration and Communication
(viii) Integration with Other Systems