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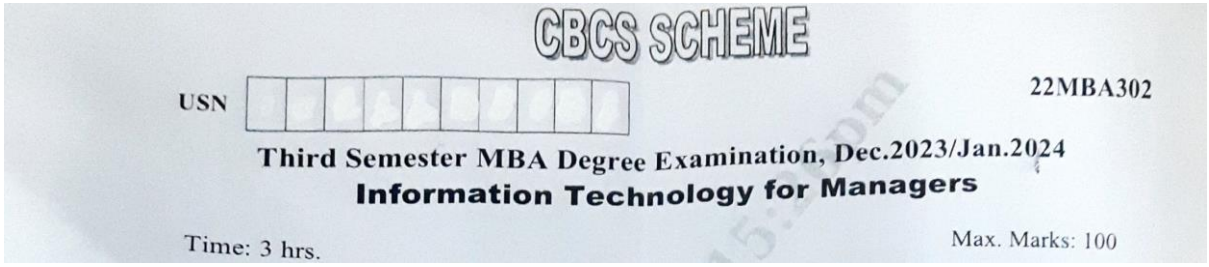

CBCS SCHEME

USN

22MBA302

Third Semester MBA Degree Examination, Dec.2023/Jan.2024

Information Technology for Managers

Time: 3 hrs. Max. Marks: 100

1. a. Define MIS **(03 Marks)**

Management Information System is a User-machine combination that is engaged in information management for decision making.

b. Explain the role of MIS **(07 Marks)**

Here are some of the important roles of the MIS**:**

i. MIS satisfies the diverse information needs through variety of systems such as query system, analysis system, modeling system and decision support system.

ii. MIS helps in strategic planning, management control, operational control and transaction processing. The MIS helps in the clerical personal in the transaction processing and answers the queries on the data pertaining to the transaction, the status of a particular record and reference on a variety of documents.

iii. The MIS helps the junior management personnel by providing the operational data for planning, scheduling and control , and helps them further in decision-making at the operation level to correct an out of control situation.

iv. The MIS helps the middle management in short term planning, target setting and controlling the business functions. It is supported by the use of the management tools of planning and control.

v. The MIS helps the top level management in goal setting, strategic planning and evolving the business plans and their implementation.

vi. The MIS plays the role of information generation, communication, problem identification and helps in the process of decision-making. The MIS, therefore, plays a vital role in the management, administration and operation of an organization.

c. What is ecommerce? Explain four basic categories of ecommerce. (10 Marks)

There are many *types of e-commerce models*, based on market segmentation, that can be used to conduct business online.

The 4 basic types of business models that can be used in e-commerce include:

1. Business-to-Business (B2B),
2. Business-to-Consumer (B2C),
3. Consumer -to-Business (C2B),
4. Consumer -to Consumer (C2C),

Business-to-Business (B2B)

- Business-to-Business (B2B) e-commerce encompasses all electronic transactions of goods or services conducted between companies.
- Generally agreements/contracts precede the ecommerce transactions
- Transaction between Raw material suppliers – manufacturers – wholesalers – retailers

  Ex: Amazon Business, Indiamart, Udaan, JioMart, Alibaba, Boeing

Business-to- Consumer (B2C)

- The Business-to Consumer type of e-commerce is distinguished by the establishment of electronic business relationships between businesses and final consumers.
- It corresponds to the retail section of e-commerce, where traditional retail trade normally operates.
- These types of relationships can be easier and more dynamic, but also more sporadic or discontinued.
- This type of commerce has developed greatly, due to the advent of the web, and there are already many virtual stores and malls on the Internet, which sell all kinds of consumer goods.
- When compared to buying retail in traditional commerce, the consumer usually has more information available in terms of informative content and there is also a widespread idea that you'll be buying cheaper, without jeopardizing an equally personalized customer service, as well as ensuring quick processing and delivery of your order.

- The decision-making process for a B2C purchase is much shorter than a business-to-business (B2B) purchase, especially for items that have a lower value, thus having a shorter sales cycle

  Ex: Flipkart, Amazon, Myntra

Consumer -to-Business (C2B)

- Consumer-to-business (C2B) e-commerce is when a consumer makes their services or products available for companies to purchase.
- In C2B there is a complete reversal of the traditional sense of exchanging goods.
- This approach includes reverse auctions, in which customers name the price for a product or service they wish to buy.
- Crowdsourcing based projects (Ex: Impactguru)
- A large number of individuals make their services or products available for purchase for companies seeking precisely these types of services or products (Job portals like LinkedIn, freelance sites like fiverr, freelancer)

Consumer -to- Consumer (C2C)

- e-commerce encompasses all electronic transactions of goods or services conducted between consumers.
- Generally, these transactions are conducted through a third party, which provides the online platform where the transactions are actually carried out.
- The third-party platform typically earns their money by charging transaction or listing fees. These businesses benefit from self-propelled growth by motivated buyers and sellers, but face a key challenge in quality control and technology maintenance.
- Customers may often find items that are difficult to locate elsewhere. Also, margins can be higher than traditional pricing methods for sellers as there are minimal costs due to the absence of retailers or wholesalers.
- Opening a C2C site takes careful planning.

  Ex: Craigslist and eBay

2.a. Write a short notes on Group Decision Support System (GDSS) (03 Marks)

GDSS is a computer-based system that helps groups make decisions on unstructured problems. It consists of hardware, software tools, and people, and supports all phases of decision making. In a group decision support system (GDSS) electronic meeting, each participant is provided with a computer. The computers are connected to each other, to the facilitator's computer and to the file server. A projection screen is available at the front of the

room. The facilitator and the participants can both project digital text and images onto this screen.

b. What is Transactional Processing System (TPS)? Explain the model of TPS (07 Marks)

Transaction processing system meaning refers to an information processing system that processes all transactions taking place within the business. Such transactions include modification, collection, and retrieval of transaction data. A TPS is highly consistent, efficient, and dependable. It is the same system that online businesses utilize for e-commerce.

A TPS has the following four components. One must understand them to know how the system works.

1. Inputs: Inputs are original requests for payments or products outside parties send to an organization's TPS. Typically, inputs include bills, coupons, custom orders, and invoices.
2. Output: Outputs are the documents a TPS generates after it processes all inputs, for example, the receipts stored by companies in their records. Such documents help validate transactions and offer crucial reference details for tax and multiple official purposes.
3. Storage: A TPS's storage component is where organizations keep their output and input data. Some businesses store the documents in a database. This component ensures the security, accessibility, and organization of all documents for late use.
4. Processing System: The processing system goes through every input and establishes a useful output, for example, a receipt. It helps outline the input data and defines what the outputs must be. One must remember that the processing time varies depending on the type of TPS an organization uses.

c. What are the major security challenges in E-Enterprises? Explain the security measures that can be adopted in an e-enterprise (10 Marks)

Security is a critical concern for e-businesses due to the sensitive nature of online transactions and data. Here are the major security issues categorized for e-businesses:

i. Data Breaches and Information Theft:

Data breaches can occur through various means, such as hacking, phishing attacks, malware infections, and insider threats.

ii. Payment Fraud and Financial Loss:

a. Credit card fraud, where stolen or compromised card details are used for unauthorized transactions.
b. Online payment systems may also be vulnerable to exploitation, manipulation, or security breaches, resulting in financial fraud and loss.

iii. Identity Theft and Account Takeover:
a. Identity theft involves the unauthorized use of a person's personal or financial information to impersonate them online.
b. Attackers may use stolen identities or compromised accounts for fraudulent activities, such as making purchases, accessing sensitive information, or committing identity fraud.

iv. Malware and Ransomware Attacks:
a. Malware, including viruses, worms, and trojans, can infect e-business systems and compromise security.
b. Ransomware attacks encrypt data or restrict access to systems until a ransom is paid, causing disruption and financial loss.

v. Phishing and Social Engineering:
a. Phishing attacks use deceptive emails, websites, or messages to trick users into revealing sensitive information, such as passwords or financial data.
b. Social engineering tactics exploit human psychology and trust to manipulate users into performing actions that compromise security, such as clicking on malicious links or disclosing confidential information.

Security measures that can be adapted :

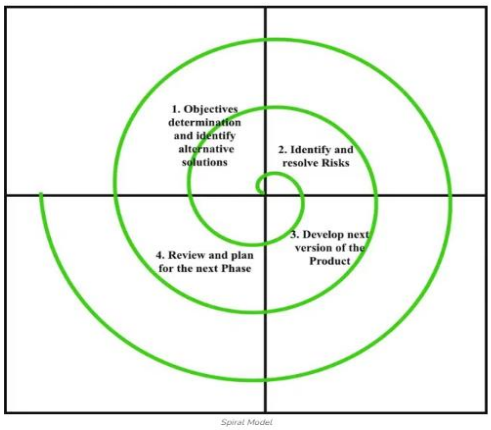
a. Secure your passwords
b. Opt for secure hosting
c. Get an SSL certificate
d. Install security plugins and anti-malware software
e. Schedule regular site updates
f. Perform timely backups
g. Add multi-factor authentication (MFA)
h. Use a CDN (Content Delivery Network)

3. a. What is SSAD? (03 Marks)

SSAD stands for Structured Software Analysis And Design. It’s a methodology used in software development to improve quality, reduce the risk of system failure, and

establish concrete management specifications and documentation1. The primary goal of systems analysis and design is to enhance organizational systems by repetitively learning new approaches and techniques for building more effective and efficient systems

b. Explain with a neat sketch, the spiral model of System Development (07 Marks)



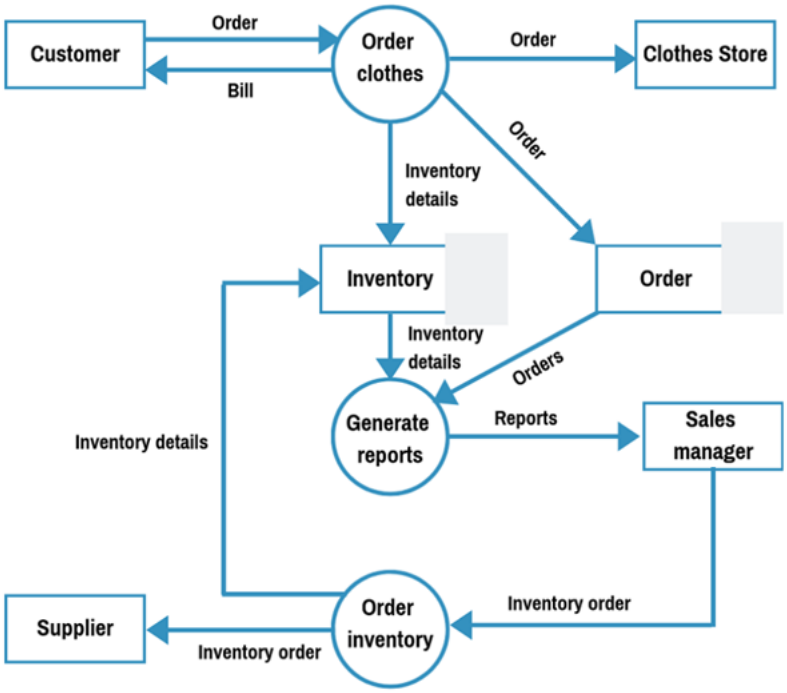
The Spiral Model is a software development model that combines elements **of both the iterative development process model and the waterfall model.** It is particularly well-suited for projects with **high risk or uncertainty**.

Phases:

1. **Planning**: In this phase, the project's objectives, constraints, and alternatives are identified. The project is divided into smaller segments, and a plan is developed for each segment. Risks are also identified and analyzed during this phase.
2. **Risk Analysis**: This phase involves a thorough analysis of identified risks. Risks are assessed in terms of their probability of occurrence, potential impact on the project, and the strategies for mitigating or managing them. Risk analysis helps in determining which risks are critical and require immediate attention.
3. **Engineering**: In this phase, development takes place according to the plan formulated in the planning phase. Requirements are gathered, design is created, code is written, and the software is tested. Each cycle of the spiral model produces a deliverable, which may be a partial version of the software or a prototype.

4. **Evaluation:** The evaluation phase involves reviewing the results of the previous phases, including the developed product and the project's progress. Feedback from stakeholders is gathered and used to refine the project's objectives, plans, and risk assessments.

c. Draw a DFD for online Customer Order Process (10 Marks)



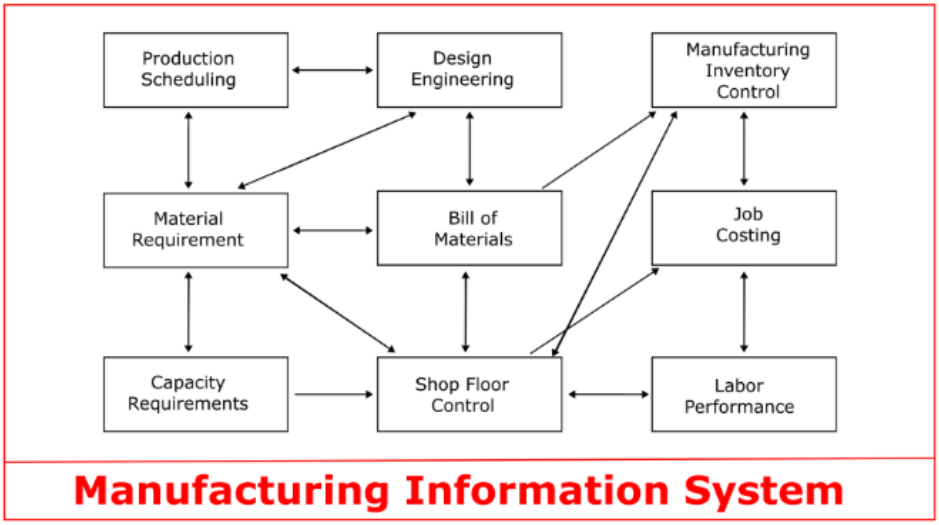
4.a.What is meant by Operating System? (03 Marks)

An operating system (OS) is software that allows a user to run other applications on a computing device1. It manages computer hardware and software resources, and provides common services for computer programs234. It also controls and schedules the execution of other programs, and manages storage, input/output, and communication resources

b. Explain the impact of MIS in the application of manufacturing sector (07 Marks)

Manufacturing information systems are computer software platforms that provide real-time information about manufacturing operations12345. They are designed to support decision-making, planning, and control at different levels of the company hierarchy23. They collect, process, and present data from various sources,

such as production equipment, inventory systems, and quality control systems24. They are integral to many industries that involve the transformation of raw materials



c. Discuss the role of IS in Banking Industry (10 Marks)

i. Account Management: IS assists in managing customer accounts, including account opening, account maintenance, and account closure processes.

ii. Transaction Processing: IS facilitates the automation of transaction processing, including deposits, withdrawals, fund transfers, and loan processing.

iii. Channel Management: IS supports various banking channels, including branch banking, online banking, mobile banking, and ATM networks.

iv. Loan Management: IS supports the end-to-end management of loan processes, including loan origination, underwriting, disbursement, and servicing.

v. Financial Reporting and Analysis: IS generates financial reports and analytics to provide insights into the bank's financial performance, profitability, and liquidity.

vi. Fraud Detection and Prevention: IS includes features for detecting and preventing fraudulent activities, such as unauthorized transactions, identity theft, and money laundering.

vii. Compliance and Regulatory Reporting: IS assists banks in complying with regulatory requirements and reporting obligations imposed by regulatory authorities.

viii. Risk Management: IS helps banks in assessing and managing various types of risks, including credit risk, market risk, operational risk, and compliance risk.

ix. Customer Relationship Management (CRM): IS in banks helps in maintaining detailed customer profiles, tracking interactions, and analyzing customer behavior.

x. Strategic Planning and Decision Making: IS provides executives and managers with timely and relevant information for strategic planning and decision-making.

5. a. What is meant by a database? (03 Marks)

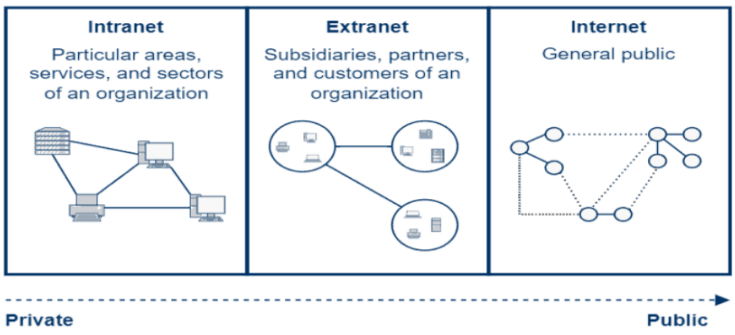
.Database is a collection of data which can be used alone, or combined / related to other data to provide answers to the user's queries. Generally, it refers to tabulated data.

b. Write short notes on (i) Internet (ii) Intranet and Extranet (07 Marks)

Internet: Internet is a global network. The Internet consists of a large number of devices (in particular, computers) exchanging data around the world. This data is steered through cables and wireless mediums to reach its destination. .Furthermore, the Internet contemplates miscellaneous content accessible to every connected person. It means, in practice, that the Internet is public, everyone with the proper equipment can access this worldwide network, and it has no specific owner.

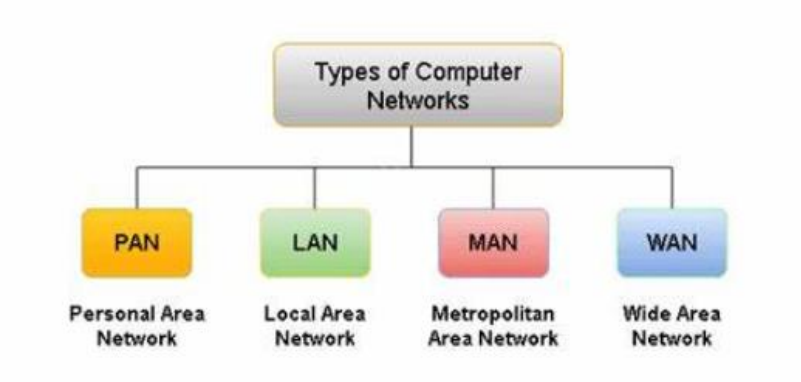
The intranet: like the Internet, consists of a network that connects multiple devices enabling them to communicate and exchange data. However, unlike the Internet, the intranet is much smaller and works only for a particular company or organization. So, we can see the intranet as a private network tailored to enable a small group to communicate, such as the employees of an organization. Since we have a predefined group of users and a delimited accessing area, the maintainers of an intranet can enforce several security policies and solutions on that

The Extranet: Similar to the intranet, the extranet is a private and secure network. But, it connects multiple organizations (such as partners and suppliers) and even customers instead of only working internally in a single organization. The central purpose of the extranet is to provide secure communication and enable efficient collaboration between trusted entities. It means that the extranet has no public access. Actually, we should identify and recognize everyone accessing the network or, at least, the company or location from where the access comes.



c. What is network? Explain various types of networks. (10 Marks)

In a computing context, networking means, in short, data exchange between any computing device. Naturally, which enables the computing devices to exchange data is the computer networks. However, these networks are not a simple structure. Actually, we have multiple categories and types of networks, each adapted for specific needs and purposes.



6. a. What is Artificial Intelligence (AI)? (03 Marks)

Artificial intelligence, or AI, is technology that enables computers and machines to simulate human intelligence and problem-solving capabilities.

b. What is the application of AI in (i)Agriculture and (ii) Business (07 Marks)

(i)AI applications chiefly include Smart farming.

Smart farming relies heavily on data from various sources to optimize agricultural practices. By leveraging data from these diverse sources, smart farming practices aim to increase productivity, reduce resource usage, minimize environmental impact, and improve profitability for farmers.

- Data from weather stations, satellites, and meteorological services provide insights into temperature, humidity, precipitation, wind speed, and other weather parameters.
- Soil sensors and mapping technologies provide data on soil composition, moisture content, nutrient levels, pH levels, and temperature. This information helps farmers determine the best crops to plant, irrigation schedules, and fertilizer application rates.
- Remote sensing technologies, such as drones and satellites, capture data on crop health, growth stages, and yield estimates. This data helps farmers monitor crop conditions, detect diseases or pests early, and optimize harvest timing.
- Global Positioning System (GPS) and Geographic Information System (GIS) technologies enable precise mapping of fields and tracking of farm machinery. This data is used for automated vehicle guidance, precision planting, and yield mapping.

- Access to market data and price forecasts helps farmers make decisions on crop selection, timing of sales, and marketing strategies. This data includes commodity prices, supply and demand trends, and market news.
- Farm management AI software platforms integrate data from multiple sources and provide tools for data analysis, decision-making, and planning. These platforms enable farmers to optimize resource allocation, streamline workflows, and improve overall farm efficiency.

(ii) Business:

- Data-driven Insights: AI and IoT generate vast amounts of real-time data from connected devices, sensors, and systems. By analyzing this data using AI algorithms, businesses gain valuable insights into customer behavior, market trends, and operational performance. These insights enable data-driven decision making, allowing businesses to make informed choices based on empirical evidence rather than intuition.
- Predictive Analytics: AI and IoT enable predictive analytics by forecasting future trends, outcomes, and opportunities based on historical data and machine learning models. Businesses can use predictive analytics to anticipate customer needs, identify potential risks, and optimize resource allocation, leading to more proactive and strategic decision making.
- Personalization and Customer Experience: AI and IoT enable businesses to deliver personalized products, services, and experiences tailored to individual customer preferences. By analyzing customer data and behavior patterns, businesses can personalize marketing messages, recommend products, and optimize pricing strategies, enhancing customer satisfaction and loyalty.
- Risk Management and Fraud Detection: AI and IoT help businesses identify and mitigate risks by detecting anomalies, patterns, and potential threats in real-time data streams. For example, AI algorithms can analyze transaction patterns to detect fraudulent activities, while IoT sensors can monitor environmental conditions to prevent equipment failures or safety hazards. This proactive approach to risk management minimizes potential losses and protects business interests.
- Strategic Planning and Innovation: AI and IoT empower businesses to assess market opportunities, evaluate strategic options, and prioritize investments in new initiatives or technologies, fostering a culture of innovation and agility.

- Supply Chain Optimization: AI and IoT optimize supply chain operations by providing real-time visibility, tracking, and predictive insights into inventory levels, production processes, and logistics. Businesses can use AI algorithms to forecast demand, optimize inventory levels, and minimize supply chain disruptions, improving efficiency, and reducing costs.

c. What is IoT and explain its applications in a Smart City? (10 Marks)

The **Internet of Things (IoT)** refers to a network of physical devices, vehicles, appliances, and other objects that are embedded with sensors, software, and network connectivity. These interconnected devices can collect and share data without human intervention.

i. **Improved Transportation**: Smart transportation systems can alleviate traffic congestion and enhance public transportation efficiency. Technologies like IoT sensors, traffic monitoring systems, and intelligent traffic management algorithms can optimize traffic flow, reduce travel times, and minimize environmental pollution.

ii. **Enhanced Infrastructure Management**: Smart city solutions can improve the management and maintenance of infrastructure assets such as roads, bridges, utilities, and public facilities. IoT-enabled sensors and predictive analytics can detect infrastructure defects, monitor asset conditions, and prioritize maintenance activities, ensuring the reliability and longevity of critical infrastructure.

iii. **Energy Efficiency and Sustainability**: Implementing smart energy management systems can promote energy conservation and sustainability. IoT devices, smart meters, and energy monitoring platforms can optimize energy consumption, detect wastage, and facilitate the integration of renewable energy sources, reducing carbon emissions and enhancing environmental sustainability.

iv. **Water Management**: Smart water management solutions can address water scarcity and improve water distribution systems. IoT sensors, water quality monitors, and smart irrigation systems can optimize water usage, detect leaks, and ensure efficient water supply to residents, businesses, and agricultural areas.

v. **Public Safety and Security**: Smart city technologies can enhance public safety and security through advanced surveillance, emergency response, and crime prevention measures. AI-powered video analytics, sensor networks, and

predictive policing algorithms can detect suspicious activities, identify security threats, and enable proactive law enforcement efforts, ensuring the safety of residents and visitors.

vi. **Smart Buildings and Urban Planning**: Smart building technologies can promote sustainable urban development and efficient resource utilization in Bangalore. IoT sensors, building automation systems, and energy management platforms can optimize building operations, reduce energy consumption, and create comfortable and eco-friendly living and working environments.

7. a. Why is MIS a strategic need of management study? (3 Marks)

MIS helps in strategic planning, management control, operational control and transaction processing. The MIS helps in the clerical personal in the transaction processing and answers the queries on the data pertaining to the transaction, the status of a particular record and reference on a variety of documents.

MIS helps the junior management personnel by providing the operational data for planning, scheduling and control , and helps them further in decision-making at the operation level to correct an out of control situation. The MIS helps the middle management in short term planning, target setting and controlling the business functions. It is supported by the use of the management tools of planning and control.

The MIS helps the top level management in goal setting, strategic planning and evolving the business plans and their implementation.

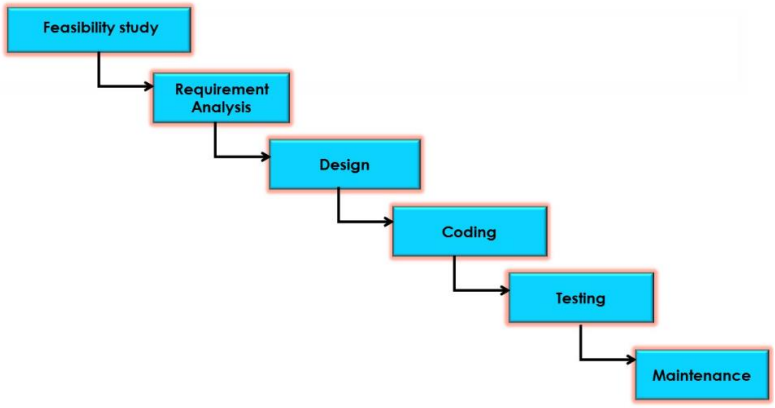
b. Explain the MIS application for a Personnel Management Information System (07 Marks)

Personnel management system is a set of procedures and applied technology that human resources workers use to track and organize data about the employees within a business or organization1. It includes all administrative and routine tasks involved in a human resources department, from hiring to firing an employee. Personnel management focuses on recruiting the right individuals to fit a position and supporting those already working for the company.

Personnel management software allows an organization to automate many routine, labor-intensive HR tasks that are usually carried out manually. This can save countless man hours and offer significant cost savings along the way. In addition, a key objective of personnel database software is to make the many HR processes that form part of the

personnel function more effective and streamlined, cutting error rates drastically and improving the consistency and integrity of the organization's HR data.

vi. Explain the stages in waterfall model in Systems Development (10 Marks)



1. Feasibility Study

- Understanding the problem and identifying different solutions to solve the problem.
- Identifying the best solution to solve the problem
- Determining technical, financial and organizational feasibility of implementing the chosen solution

  - A feasibility study is a detailed analysis of the project which shows the proposed cost, duration, and benefits of the project against various alternatives.

2. Requirements Analysis and Specification

The aim of the requirement analysis and specification phase is to understand the exact requirements of the customer and document them properly. This phase consists of two different activities.

- **Requirement gathering and analysis:** Firstly all the requirements regarding the software are gathered from the customer and then the gathered requirements are analyzed. The goal of the analysis part is to remove incompleteness and inconsistencies
- **Requirement specification:** These analyzed requirements are documented in a software requirement specification (SRS) document. SRS document serves as a contract between the development team and customers. Any future dispute between the customers and the developers can be settled by examining the SRS document.

3. Design

The goal of this phase is to convert the requirements acquired in the SRS into a format that can be coded in a programming language. It includes high-level and detailed design as well as the overall software architecture. A Software Design Document is used to document all of this effort (SDD).

4. Coding and Unit Testing

In the coding phase software design is translated into source code using any suitable programming language. Thus each designed module is coded. The aim of the unit testing phase is to check whether each module is working properly or not.

5. Integration and System testing

Integration of different modules is undertaken soon after they have been coded and unit tested. Integration of various modules is carried out incrementally over a number of steps. During each integration step, previously planned modules are added to the partially integrated system and the resultant system is tested. Finally, after all the modules have been successfully integrated and tested, the full working system is obtained and system testing is carried out on this.

System testing consists of three different kinds of testing activities as described below.

- **Alpha testing:** Alpha testing is the system testing performed by the development team.
- **Beta testing:** Beta testing is the system testing performed by a friendly set of customers.
- **Acceptance testing:** After the software has been delivered, the customer performed acceptance testing to determine whether to accept the delivered software or reject it.

6. Maintenance

Maintenance is the most important phase of a software life cycle. The effort spent on maintenance is 60% of the total effort spent to develop a full software. There are basically three types of maintenance.

- **Corrective Maintenance:** This type of maintenance is carried out to correct errors that were not discovered during the product development phase.
- **Perfective Maintenance:** This type of maintenance is carried out to enhance the functionalities of the system based on the customer’s request.

- **Adaptive Maintenance:** Adaptive maintenance is usually required for porting the software to work in a new environment such as working on a new computer platform or with a new operating system.

Q.8. Casestudy (Compulsory):

M/S Home Foods is a small scale manufacturing firm producing home-made snacks. The business has been growing very fast. The owner set up a separate manufacturing units and procured machineries related to their business. Since the business was expanding, the management found it difficult to contrl the operations and resources due to lack of centralized system. The management did not have the access to information for decision making.

Questions:

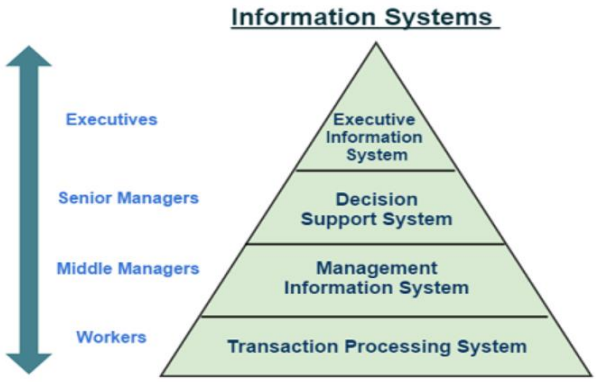
a. **Evaluate the existing system (05 Marks)**

   Existing system has data and operations managed in silos at th eindividual manufacturing units and there is no centralized access.

b. **Discuss how information technology can support the organization. (05 Marks)**

   Our world today has changed a great deal with the aid of information technology. Things that were once done manually or by hand have now become computerized operating systems, which simply require a single click of a mouse to get a task completed. With the aid of IT we are not only able to stream line our business processes but we are also able to get constant information in real time using AI and IoT systems that is up to the minute and up to date.

c. **What type of Decision Support System (DSS) will you recommend if they want information such as Accounts Receivable, sales Analytics etc. and why? (05 Marks)**



A decision support system that flows from TPS to EIS is recommended.

d. What points will you consider for analyzing the current system? (05 Marks)

"Good decision making" means we are informed and have relevant and appropriate information on which to base our choices among alternatives. In some cases, we support decisions using existing, historical data, while other times we collect the information, especially for a particular choice process. The information comes in the form of facts, numbers, impressions, graphics, pictures, and sounds. It needs to be collected from various sources, joined together, and organized.