CMR INSTITUTE OF TECHNOLOGY

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Internal Assesment Test - II

Sub:	Information Technology for Managers							Code:	22MBA302
Date:	**04.03.2024**	Duration:	**90 minutes**	Max Marks:	**50**	Sem:	**III**	Branch:	**MBA**

SOLUTION

		Marks	OBE CO	OBE RBT
	Part A - Answer Any Two Full Questions (2* 20 = 40 marks)			
1 (a)	What kind of data is needed to be stored by Marketing information system • Current marketing data, such as customer information, sales data, market research findings, and demographic data. • Historical integrated data from sales transactions, customer interactions, website analytics, and other relevant sources • Unstructured data like images, videos, audio from various sources) store diverse types of marketing data, including social media posts, customer reviews, and multimedia content.	[03]	CO3	L1
(b)	Explain the functions of Material Management Information System A Material Management Information System is an information system that facilitate the management of materials, supplies, and inventory within an organization. The following are the functions: • Inventory Management: It involves tracking the movement of materials, supplies, and products within the organization, including receiving, storing, issuing, and replenishing inventory. • Procurement Management: It involves managing the procurement process, including vendor selection, purchase order creation, tracking of purchases, automating procurement workflows and managing supplier relationships. • Supply Chain Management: integrates with supply chain processes, enabling organizations to optimize their supply chain activities, streamline logistics, and ensure timely delivery of materials and supplies. • Demand Forecasting and Planning: Provide tools for demand forecasting based on historical data, current trends, and other factors. This helps in planning inventory levels, procurement activities, and production schedules more accurately.	[07]	CO3	L2

- Warehouse Management: managing warehouse operations like space utilization, picking, packing, and shipping of materials. It can also provide real-time visibility into warehouse activities and inventory levels.
- Quality Control and Assurance: Facilitates inspection tracking, batch tracking, and compliance management, to ensure that materials and products meet quality standards.
- Reporting and Analytics: Generates reports and analytics on various aspects of material management, such as inventory levels, procurement costs, lead times, and supplier performance. This data helps in decision-making and continuous improvement.
- Integration with Other Systems: Integration with Enterprise Resource Planning (ERP) systems, Customer Relationship Management (CRM) systems, and financial systems, to provide a unified view of business operations.
- Overall, Material Management Information Systems play a crucial role in optimizing the management of materials and supplies across the organization, improving efficiency, reducing costs, and enhancing overall productivity.

(c)	Examine the applications of MIS in Banking sector	[10]	CO4	L3

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

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

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

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

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

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

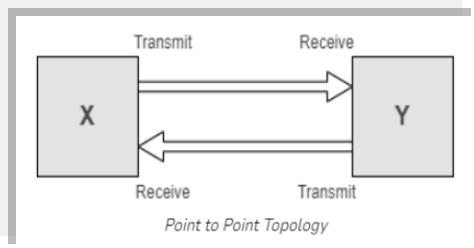
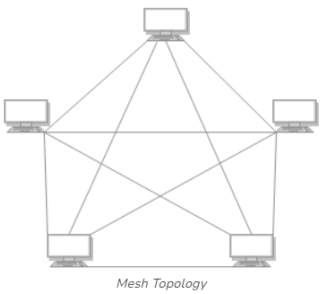
vii. Compliance and Regulatory Reporting: MIS assists banks in complying with regulatory requirements and reporting obligations imposed by regulatory authorities.

viii. Risk Management: MIS helps banks in assessing and managing

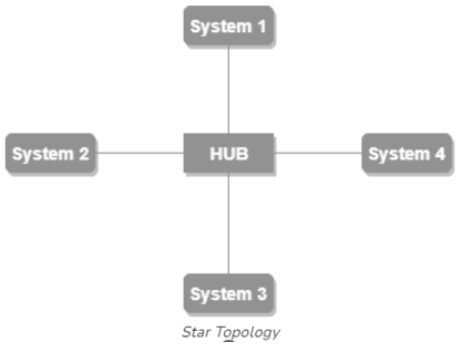
various types of risks, including credit risk, market risk, operational risk, and compliance risk.

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

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

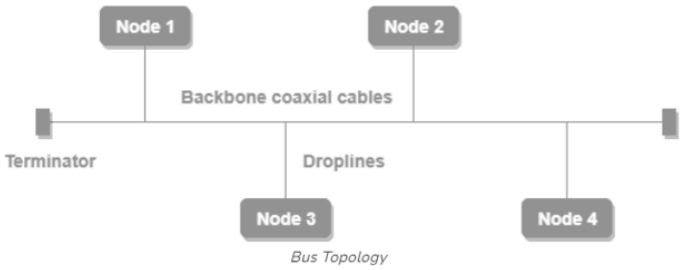
2 (a)	What are three characteristics of a Primary key • Uniqueness: Every value in a primary key column must be unique within the table. This uniqueness ensures that each row in the table can be uniquely identified. • Non-null: A primary key column cannot contain null values. Each row must have a valid value for the primary key column, ensuring that it can serve as a reliable identifier for that row. • Immutable and permanent: The value of a primary key should ideally be immutable, meaning it should not change over the lifetime of the row. This ensures the integrity of references to that row from other tables.	[03]	CO3	L1
(b)	Outline different Network Topologies with block diagrams Network Topology is the way that defines the structure, and how these components are connected to each other. Types of Network Topology (Following block diagrams with explanation) The various network topologies are: • Point to Point Topology  Point to Point Topology • Mesh Topology  Mesh Topology	[07]	CO3	L4

- Star Topology



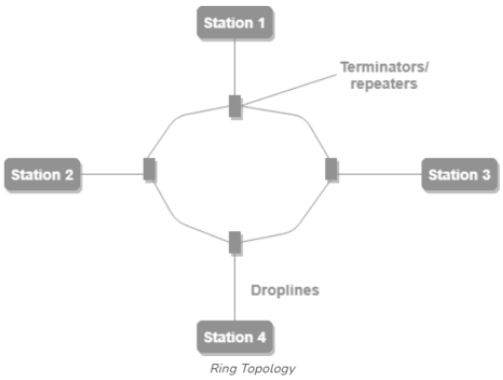
Star Topology

- Bus Topology



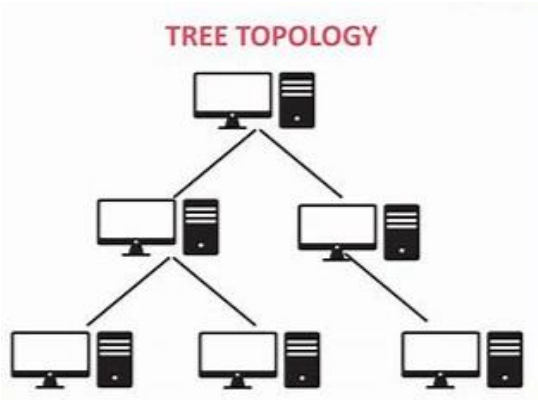
Bus Topology

- Ring Topology

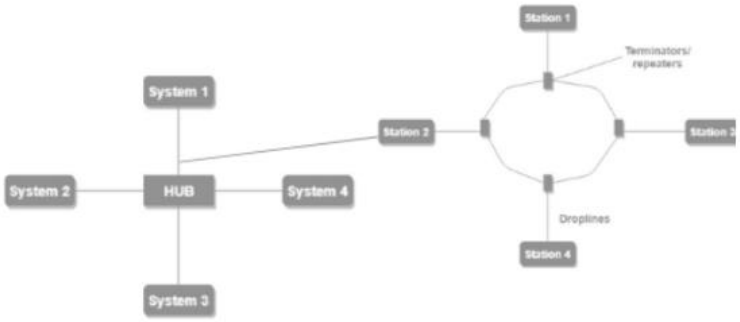


Ring Topology

- Tree Topology



- Hybrid Topology



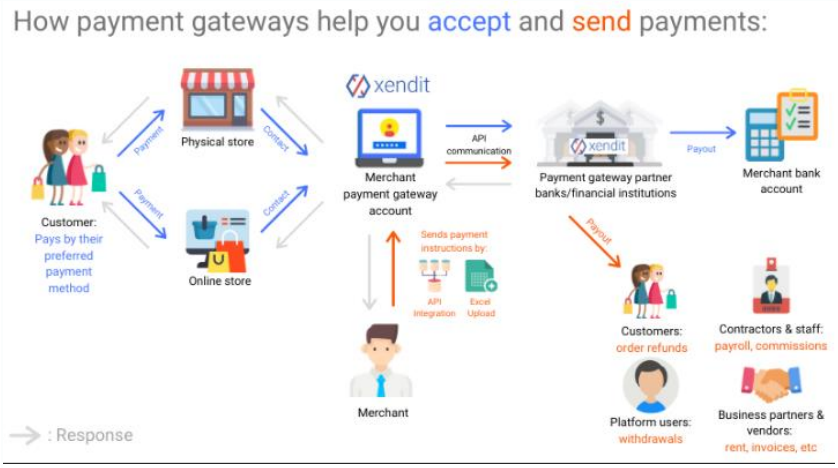
Hybrid Topology

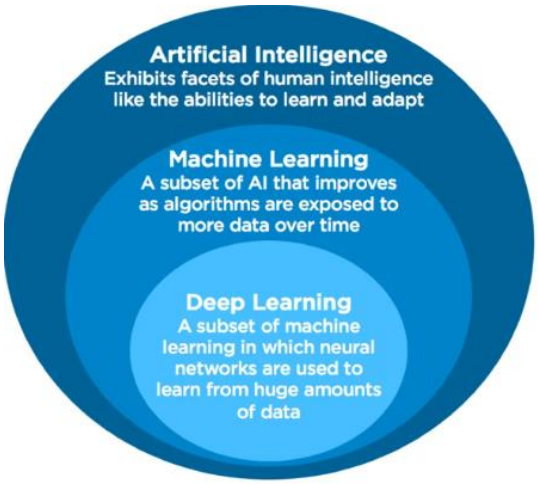
(c) Examine the process of Electronic Payment System in e-Business with a data flow diagram [10] CO3 L3

An **Electronic Payment System** is defined as a mode of payment over an electronic network, such as the Internet.

The steps involved in the e-payment process between a customer and a merchant are as follows:

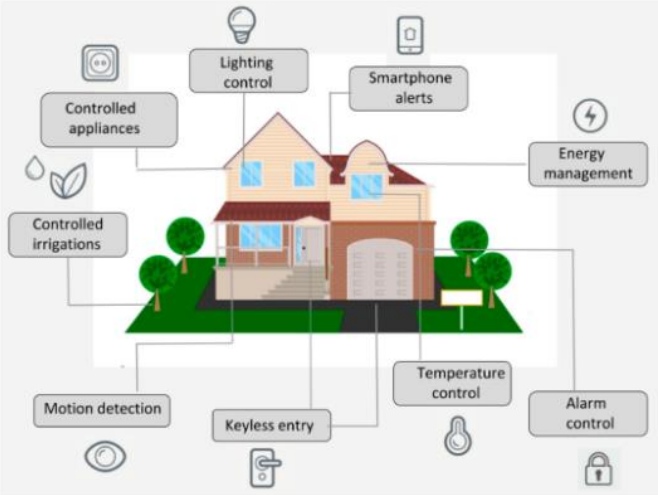
- A customer purchases goods from an online retailer. The customer is directed to a secure server where he enters a payment gateway.
- The customer enters the required information, which is encrypted using secured technologies.
- The customer's information is directed to an online transaction server, where the customer's bank authorizes or declines the payment, depending on whether the details are valid and the customer has adequate credit to pay for the purchase.
- If the information is valid and sufficient funds are available, the information is transmitted to the institution that receives the merchant's payments; a deposit is made to the merchant's bank account.
- Once the merchant's bank receives the payment, the same is communicated to the merchant, who, in turn, confirms the same to the customer and initiates the shipping of goods.



3 (a)	Differentiate Artificial Intelligence, Machine Learning and Deep learning.  Elaboration with examples under each is required.	[03]	CO3	L2
(b)	Recommend AI applications for different business functions. • Data-driven Insights:. By analyzing the vast amount of 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 enables 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. • Automation and Efficiency: AI automates repetitive tasks, streamline processes, and optimize workflows, reducing manual efforts and increasing operational efficiency. For example, AI-powered chatbots can handle customer inquiries, and AI algorithms can optimize supply chain logistics. This automation frees up time for decision-makers to focus on high-level strategic tasks. • Personalization and Customer Experience: 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 help mitigate risks by detecting anomalies, patterns, and potential threats in real-time data streams. 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.	[07]	CO4	L5

- Supply Chain Optimization: Businesses can use AI algorithms to forecast demand, optimize inventory levels, and minimize supply chain disruptions, improving efficiency, and reducing costs.

(c) Illustrate the applications of IoT in smart homes with a block diagram [10] CO4 L3



IoT (Internet of Things) technology has revolutionized the concept of smart homes by enabling various devices and appliances to communicate, collect, and exchange data, thereby enhancing efficiency, convenience, and security. The following are some applications of IoT for smart homes:

- Home Automation: IoT enables homeowners to automate various tasks such as turning on/off lights, adjusting thermostats, locking doors, and controlling appliances remotely through smartphones or voice commands.
- Energy Management: IoT devices can monitor energy consumption in real-time and optimize usage based on preferences and patterns. Smart thermostats, smart plugs, and energy monitoring systems help reduce energy wastage and lower utility bills.
- Security and Surveillance: IoT-powered security cameras, motion sensors, door/window sensors, and smart locks provide comprehensive security solutions.
- Health Monitoring: IoT devices such as wearables and smart health monitors can track vital signs, physical activity, and sleep patterns. This data can help individuals monitor their health status and enable caregivers to provide timely assistance to elderly or medically vulnerable residents.
- Appliance Management: IoT-enabled appliances like refrigerators, washing machines, and ovens can communicate with each other and with the homeowner's smartphone. Users can receive alerts, schedule tasks, and even diagnose problems remotely, enhancing appliance efficiency and lifespan.
- Environmental Monitoring: IoT sensors can monitor indoor air quality, temperature, humidity, and other environmental factors. This information helps homeowners maintain a comfortable and healthy living environment and can also facilitate early detection of issues like leaks or mold.
- Smart Lighting: IoT-connected lighting systems allow users to control brightness, color, and scheduling of lights remotely. Integration with

motion sensors and ambient light sensors further enhances energy efficiency and security.

- Voice Assistance: Virtual assistants like Amazon Alexa, Google Assistant, and Apple Siri can be integrated into smart home ecosystems, allowing users to control various devices and access information through voice commands.
- Water Management: IoT-enabled water sensors can detect leaks and monitor water usage in real-time, helping homeowners conserve water, prevent damage from leaks, and reduce water bills.
- Entertainment and Media: IoT devices can streamline entertainment experiences by integrating smart TVs, speakers, and streaming services. Users can control their media devices, access content, and create personalized entertainment setups.

Part B - Compulsory (01*10=10 marks) – CASE STUDY

4. GreenTech is an agri-based company which aims to transform traditional farming with the power of data into smart farming. For years, farmers used data to take decisions on when to plant, what to plant, how much fertilizers and pesticides to apply, when to harvest etc. IoT-based machines and vehicles collect sensor data and analyze data to perform risk analysis based on likely floods, heavy rains or no rains. Predict plant diseases in advance and forecast the likely produce that can be harvested.

(a)	Examine the sources and type of data needed for smart farming?	[5]	CO4	L3

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.

The following are the common data sources used in smart farming:

- Weather Data: Accurate and timely weather information is crucial for making informed decisions in agriculture. Data from weather stations, satellites, and meteorological services provide insights into temperature, humidity, precipitation, wind speed, and other weather parameters.
- Soil Data: 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.
- Crop Data: 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.
- GPS and GIS Data: 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.
- Market Data: 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.
- IoT Sensors: Internet of Things (IoT) sensors deployed throughout the farm collect real-time data on various parameters such as environmental conditions, equipment performance, and resource

usage. This data enables continuous monitoring and optimization of farm operations.

- Satellite Imagery: High-resolution satellite imagery provides detailed information on land use, vegetation cover, and changes in the landscape over time. This data supports crop monitoring, precision agriculture, and land management practices.
- Farm Management Software: Farm management 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.
- Government and Research Institutions: Agricultural extension services, research institutions, and government agencies often provide valuable data, research findings, and advisory services to farmers. This includes information on best practices, pest and disease management, regulatory requirements, and agronomic recommendations.

(b) Assess the issues & challenges for farmers and GreenTech company to implement smart farming [5] CO4 L5

Smart farming in India faces several issues and challenges, which hinder its widespread adoption and effectiveness:

- Limited Access to Technology: Many farmers in India, especially smallholders and those in remote areas, lack access to the necessary technology and infrastructure for smart farming practices. This includes access to high-speed internet, sensors, drones, and other advanced tools.
- High Initial Investment: Implementing smart farming technologies often requires significant upfront investment, which may be prohibitive for small-scale farmers with limited financial resources. The cost of purchasing equipment, sensors, and software, as well as the need for training and technical support, can pose challenges.
- Lack of Awareness and Education: Many farmers are unaware of the potential benefits of smart farming practices or lack the knowledge and skills needed to adopt them effectively. There is a need for education and training programs to raise awareness about the opportunities offered by technology and to build capacity among farmers.
- Fragmented Land Holdings: India's agriculture sector is characterized by small and fragmented land holdings, which make it challenging to implement large-scale smart farming initiatives. Coordinating efforts across multiple small plots and engaging individual farmers can be complex and resource-intensive.
- Interoperability and Data Integration: Smart farming involves the collection and analysis of large volumes of data from diverse sources. Ensuring interoperability and seamless integration of data from different sensors, devices, and platforms remains a challenge, particularly in the absence of standardized protocols and frameworks.
- Infrastructure and Connectivity Issues: In many rural areas of India, inadequate infrastructure and unreliable electricity supply hinder the deployment and operation of smart farming technologies. Poor connectivity, especially in remote regions, limits access to real-time data and online services.
- Regulatory and Policy Constraints: Regulatory barriers, such as restrictions on the use of drones or data privacy concerns, can impede

the adoption of smart farming technologies. Clear and supportive policies are needed to facilitate innovation, investment, and the deployment of new agricultural technologies.

- Risk Management and Financial Support: Smart farming involves certain risks, including technical failures, data security breaches, and market uncertainties. Farmers may require access to risk management tools, insurance products, and financial support mechanisms to mitigate these risks and incentivize adoption.
- Adaptation to Local Contexts: Many smart farming technologies are developed based on conditions prevalent in developed countries and may not always be suitable or adaptable to the specific needs and contexts of Indian agriculture. There is a need for customized solutions tailored to local farming practices, crops, and environmental conditions.

Course Outcomes (COs)		PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4
CO1:	Understand the **importance of Information technology** for business									
CO2:	Develop insights into **technology and investigate its impact** on Business.									
CO3:	Understand **Various Measures of Technology** available in corporate world.	1b,2a,2b, 3a	1a	2c			1b, 2a,2b, 3a	1a,2c		
CO4:	Understanding how **creativity and innovative Technologies help to find a solution to problems**	1c,3c	3b	4a,4b			1c,3c, 3b	4a,4b		

Cognitive level	KEYWORDS
L1 - Remember	list, define, tell, describe, recite, recall, identify, show, label, tabulate, quote, name, who, when, where, etc.
L2 - Understand	describe, explain, paraphrase, restate, associate, contrast, summarize, differentiate interpret, discuss
L3 - Apply	calculate, predict, apply, solve, illustrate, use, demonstrate, determine, model, experiment, show, examine, modify
L4 - Analyze	classify, outline, break down, categorize, analyze, diagram, illustrate, infer, select
L5 - Evaluate	asses, decide, choose, rank, grade, test, measure, defend, recommend, convince, select, judge, support, conclude, argue, justify, compare, summarize, evaluate
L6 - Create	design, formulate, build, invent, create, compose, generate, derive, modify, develop, integrate

PO1–*Theoretical Knowledge;* PO2–*Foster Analytical and Critical Thinking Abilities for data based decision making;*
PO3– ***Develop Value Based Leadership;*** **PO4 –*Ability to Understand and communicate various business aspects to global;***
PO5 – ***Ability to lead themselves and others in the achievement of organizational goals contributing effectively to a team environment;***
PSO1- ***Comprehend Contemporary features of Business Management Science and its administration***
PSO2- ***Analyze and interpret the dynamic situations for making Business Management strategies***
PSO3- ***Handle responsibility with the ethical values for all actions undertaken by them***
PSO4- ***Adapt and focus on achieving the organizational goal and objectives with complete zeal and commitment.***

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