

END TERM EXAMINATION (MODEL PAPER)

EIGHTH SEMESTER [B.TECH]

**Paper Code: ETIT 410
ERP**

Subject: E-Commerce &

Time: 3 Hours

Maximum Marks: 75

Note: Question 1 is compulsory. Attempt 1 Question from each unit.

- Q1. (a) Discuss the important components of an ERP systems. (5)
- (b) What is Cyber Cash Model ? Explain in detail. (5)
- (c) Differentiate between traditional EDI and open EDI. (5)
- (d) Discuss the role of client-server architecture in E-commerce systems. (5)
- (e) How Cryptography helps in securing online transactions. Explain. (5)

Unit 1

- Q2. (a) Explain the term I-way ? Write the three major components which makes the I-way infrastructure. (4.5)
- (b) Explain Mercantile model from consumer perspective in detail. (8)

Q3. What are the different electronic payment methods available. Discuss their security issues also. (12.5)

Unit 2

Q4. What is Electronic Data Interchange. Discuss its architecture. What is a virtual payment system ? (12.5)

Q5. (a) Write a short note on firewall. (4)

(b) Explain different modules involved in ERP. Describe HR module of ERP in detail and explain its process. (8.5)

Unit 3

Q6. Discuss dynamic data management in complex global scenario. (12.5)

Q7. What is OLAP. How it is different from OLTP. (12.5)

Unit 4

Q8. What is MIS and DSS ? Give the difference between the two. How MIS is different from a DBMS. Also compare it with a warehouse. (12.5)

Q9. Write short notes on:

- (a) Third party authentication (3)
- (b) Value Added Networks (3)
- (c) SCM (3.5)
- (d) JIT (3)

Answers:

Q1.

a) Enterprise resource planning (ERP) is a business management software—usually a suite of integrated applications—that a company can use to store and manage data from every stage of business, including:

- ? Product planning, cost and development
- ? Manufacturing
- ? Marketing and sales
- ? Inventory management
- ? Shipping and payment

ERP provides an integrated real-time view of core business processes, using common databases maintained by a database management system. ERP systems track business resources—cash, raw materials, production capacity—and the status of business commitments: orders, purchase orders, and payroll. The applications that make up the system share data across the various departments (manufacturing, purchasing, sales, accounting, etc.) that entered the data. ERP facilitates information flow between all business functions, and manages connections to outside stakeholders.

Enterprise system software is a multi-billion dollar industry that produces components that support a variety of business functions. IT investments have become the largest category of capital expenditure in

United States-based businesses over the past decade. Though early ERP systems focused on large enterprises, smaller enterprises increasingly use ERP systems.

Organizations consider the ERP system a vital organizational tool because it integrates varied organizational systems and facilitates error-free transactions and production. However, ERP system development is different from traditional systems development. ERP systems run on a variety of computer hardware and network configurations, typically using a database as an information repository.

Financial Management

At the core of ERP are the financial modules, including general ledger, accounts receivable, accounts payable, billing and fixed asset management. If your organization is considering the move to an ERP system to support expansion into global markets, make sure that multiple currencies and languages are supported, as well as regulatory compliance in the U.S. and in foreign countries.

Other functionality in the financial management modules will include budgets, cash-flow, expense and tax reporting. The evaluation team should focus on areas that are most important to support the strategic plans for your organization.

Business Intelligence

Business Intelligence (BI) has become a standard component of most ERP packages. In general, BI tools allow users to share and analyze the data collected across the enterprise and centralized in the ERP database. BI can come in the form of dashboards, automated reporting and analysis tools used to monitor the organizational business performance. BI supports informed decision making by everyone, from executives to line managers and accountants.

Supply Chain Management

Supply Chain Management (SCM), sometimes referred to as logistics, improves the flow of materials through an organization by managing planning, scheduling, procurement, and fulfillment, to maximize customer satisfaction and profitability. Sub modules in SCM often include production scheduling, demand management, distribution management, inventory management, warehouse management, procurement and order management.

Any company dealing with products, from manufacturers to distributors, needs to clearly define their SCM requirements to properly evaluate an ERP solution. Also is easy for a vendor to focus on their applications strengths and not address the full needs of the company.

Human Resource Management

Human resource management ERP modules should enhance the employee experience – from initial recruitment to time tracking. A Sub modules can include payroll, performance management, time tracking, benefits, compensation and workforce planning. Self-service tools that allow managers and employees to enter time and attendance, choose benefits and manage PTO are available in many ERP solutions.

Manufacturing Operations

Manufacturing modules make manufacturing operations more efficient through product configuration, job costing and bill of materials management. ERP manufacturing modules often include Capacity Requirements Planning, Materials Requirements Planning, forecasting, Master Production Scheduling, work-order management and shop-floor control.

Integration

Key to the value of an ERP package is the integration between modules, so that all of the core business functions are connected. Information should flow across the organization so that BI reports on organization-wide results.

ERP can be easier than you imagine – Microsoft Dynamics ERP is cost effective and familiar to your users. If you are thinking about upgrading your systems to a fully integrated ERP system, give us a call.

(b) Cyber cash acts as a conduit for transactions among Internet, merchants, consumers and banking networks. Merchants wishing to use cyber cash to securely process credit card transactions must establish a merchant account with a bank offering cyber cash PAY button. When the customer completes a purchase and begins a cyber cash transaction by clicking on the cyber cash PAY button of a merchant's World Wide Web site, the merchant receives information about the customer's order, as well as an encrypted message from the customer's cyber cash client. The payments are signed and encrypted then sent through merchant bank to cyber cash, which in turn passes the transaction to merchant's bank for processing. The digital wallet initially supported only credit cards, but now for small dollar amounts for products and services that are too expensive to justify using a credit card. With cyber cash the wallet is used to manage your credit cards. In a sense cyber cash process electronically presents your credit card payments to the merchant in the process just like the last time we physically pulled the card out of our wallet and presented it to a merchant. Cyber coin money is placed in to an account at cyber cash and as we make cyber coin transactions money is pulled out from your wallet and sent to the cyber coin merchant's wallet. With cyber coin we electronically wallet essentially holds digital money which can be added to your wallet using credit card used for other transactions or our checking which can be linked to our wallet. The cyber cash client software manages all of this for consumer including setting up an identity or cyber cash persona linking credit card to that persona and keeping track of cyber cash transactions through a transaction log. Cyber cash security considerations- Cyber cash uses a combination of RSA public key and DES secret key technologies to protect and guarantee data through encryption and digital signatures. It uses full 768-bit RSA as well as 56-bit DES encryption of messages. All transactions are authenticated with MD5 a message digest procedure and RSA digital signatures.

c) Electronic data interchange (EDI) is the electronic exchange of business information—purchase orders, invoices, bills of lading, inventory data and various types of confirmations—between organizations or trading partners in standardized formats. EDI also is used within individual organizations to transfer data between different divisions or departments, including finance, purchasing and shipping. When the focus of EDI centers on payments, especially between banks and companies, the term financial EDI (FEDI) is sometimes used. Along with digital currency, electronic catalogs, intranets and extranets, EDI is a major cornerstone of e-commerce overall.

Two characteristics set EDI apart from other ways of exchanging information. First, EDI only involves business-to-business transactions; individual consumers do not directly use EDI to purchase goods or services. Secondly, EDI involves transactions between computers or databases, not individuals. Therefore, individuals sending e-mail messages or sharing files over a network does not constitute EDI.

d) Every computer in the Internet runs a TCP/IP protocol. To an end user, the lower level protocols like TCP/IP on which the Internet is built, is transparent. A user interacts with the Internet through one of several client/server applications. An application (client) running in one computer (client) requests a service from another application (server) running in another computer. In this architecture, there are two major classes of software that work together:

- Client Software: It usually resides on an end user's computer and typically requests services such as a Web page, database access, e-mail, and ftp to the server. It does very little work.

- . Server Software: It usually resides on another computer that interprets requests from the client, processes them, access services from other computers if needed, and returns the result to the client.

In Web-based client-server application, the client is the Web browser (Internet Explorer, Netscape) and the server is the Web server software (Internet Information Server, Apache Server).

In this section, we will discuss the two- and three-tier Web-based client-server architecture. We will also discuss the markup languages used to develop a Web page.

Two-Tier Client-Server

In a two-tier architecture the client is tier 1 and the server is tier 2. A two-tier system directs communications between the client on the Internet such as a Web browser and the Web server on the other end.

In this mode, typically a user types a URL in the browser's address line (and hits return) or clicks a link on a Web page. The browser then formats the request into a proper HTTP message and passes to the Internet.

A Web server always listens to a particular port (port 80) for any incoming HTTP message. When it receives a request, it establishes a connection with the client computer. It locates the requested Web page and formats it into an HTTP message, and sends it back to the browser. The connection is then broken.

When the client receives the message, it recognizes that the page is written in HTML-something it can interpret, and displays the formatted page. If the page contains any graphics, another connection is made between the client and the server.

Hypertext Transport Protocol (HTTP): HTTP is a lightweight, stateless protocol that browsers and servers use to converse with each other. There are only seven commands in the protocol. Two of these commands are: GET and POST. When a browser requests for a page from the Web server, it uses the GET command.

The HTTP is stateless because every request that a browser makes opens a new connection that is immediately closed after the document is returned. This means that the server cannot maintain state information about successive requests in a straightforward fashion.

This statelessness represents a substantial problem for electronic commerce applications, because an individual user is likely to have a series of related interactions (browsing catalog, select items, enter a payment information) within the application. The problem is exacerbated because the shopping mall is likely to have several buyers.

A typical HTTP request from the client to a server consists of three major parts:

- A request line
- Optional request headers (one or more)
- An optional entity body

The request line contains a command, the name of the target resource, the protocol name (HTTP), and protocol version. The request header and entity body contains additional information and may or may not be present in the message. The server response consists of three parts that are identical in structure to the client message: a response header line, one or more response header fields, and an optional entity body.

Three-Tier Client Server Application

The three-tier builds on the two-tier approach. The first tier is the client, the second tier is the server, and the third tier is typically a database application running in different computer.

Electronic commercial sites often require a three-tier system with its own hardware and software to keep track of customer purchases/preferences; query inventory databases or updates their catalog. The database services, which comprise the third tier, are often referred to as the backend machines/programs.

When a client request a Web page from the server, the interprets it, and if it is found that the Web server needs to get services from a database, it accesses the database, collects necessary data, and returns the data formatted in HTML to the client.

Q2.

a)Information highway

The global information and communications network that includes the Internet and other networks and switching systems such as telephone networks, cable television networks, and satellite communication networks.

(b) MERCANTILE MODELS FROM THE CONSUMER'S PERSPECTIVE:-

The online consumer expects quality, convenience, value, low price and control.

To meet these expectations, the business process model from consumer's perspective grouped seven activities into 3 phases.

Seven activities are

1)Product / service search

2)Product selection

3)Negotiations of terms

1)Pre-purchase determination

4) Placement of order

- 5) Authorization of payment
- 6) Receipt for payment
- 2) Purchases consumption
- 7) Customer service and support
- 3) Post purchase interaction

PRE-PURCHASE DETERMINATION:-

It includes search and discovery for a set of products in the large information space capable of meeting customer requirement and product selection from the smaller set of products based on attribute (characteristics) comparison.

Consumers have to watch for a new or existing information regarding variables that are important for the purchase decision process.

- 1) Impulsive buyers:- Who purchase products quickly.

Customers are of 3 types.

- 2) Patient buyers:- Who purchase products after making comparison.
- 3) Analytical buyer:- Who do substantial research before making the decision to purchase products or services.

In the context of E-Commerce, information search can be classified into 2 categories.

- 1) Organizational search
- 2) Consumer search

1. ORGANISATIONAL SEARCH:-

- It is an activity designed to balance the cost of acquiring information with the benefits of improved final decisions.
- As time to time changes information regarding product may be relatively less valuable, so firm or organization respond to high-paid information change by constraining search process

2. CONSUMER SEARCH:-

Consumer search are categorized into 2 types.

- Utilitarian means task related and relational, implying that a product is purchased in efficient manner.
- Hedonic value means for fun sake and playfulness, does not complete the task.

In facilitating better consumer satisfaction and organizational search, intermediaries called information brokers or brokerages. Information brokerages are needed for 3 reasons.

- Comparison shopping

- Reduced search costs
- IntegrationPURCHASE CONSUMATION:-

- After identifying the products to be purchased, the buyer and seller must interact to carryout
- A mercantile transaction is defined as the exchange of information between buyer and seller followed by the payment.
- Depending on the payment model mutually agreed on, they may interact by E-Cash, or transferring authorization for credit billing authorization (Visa, Master Cards)
- Mercantile process using digital cash or E-Cash.
- Mercantile process using credit cards.
- Basic mercantile process model for any transaction online business.

Basic Mercantile process model for any transaction online business.

- 1) Buyer contact vender to purchase product, through WWW, Email, Telephone etc.
- 2) Vender states price
- 3) Buyer and vender may or may not engage in negotiation.
- 4) If satisfy, a buyer authorized payment to the vendor with an encrypted transaction for the agreed price.
- 5) Vendor contacts his or her billing service to verify the encrypted authorization for authentication.
- 6) Billing service decrypts authorization and check buyer's account balance and put hold on the amount of transfer
- 7) Billing service gives the vendor the 'green light' to deliver products and sends a standardize message giving details of transactions for merchants records.
- 8) On notification of adequate funds to cover financial transactions, vendor delivers the goods to buyers.
- 9) On receiving the goods the buyers signs and delivers receipt. Vendor tells billing service to complete the transactions.
- 10)All the end of billing cycle, buyer receive a transactions.

Q3. TYPES OF PAYMENT SYSTEM

Electronic payment systems are mainly used in banking, retail, health –care, online markets, etc., Electronic payment system also called as Electronic Funds Transfer (EFT)

It is defined as “ any transfer of funds initiate through an electronic terminal telephonic instrument or computer or authorize a financial institution to debit or credit an account”

EFT (Electronic Funds Transfer) can be categorized in to three types.

- 1) Banking & Financial payment.
- 2) Retailing payments.(Credit Cards & Debit Cards)
- 3) Online electronic payments.

E-cash, Electronic cheques, Smart Cards, Credit cards.

Electronic Cash (E-cash)

E-cash is a new concept in on –line payment system because it combines computerized convenience with security and privacy. E-cash presents some interesting characteristics that should make it an attractive alternative for payment over the internet.

Risk Involves in E-Cash are:

- 1) Time for electronic money is valid.
- 2) How much can be stored on and transferred by electronic money.
- 3) No. of transactions made during given period or time.

Q4.

INTRODUCTION

EDI refers to the exchange of electronic business documents I.e. purchasing orders, invoices, etc. between applications. The exchange involves no paper, no human intervention and takes place in a

matter of seconds. EDI documents are formatted using published standards. EDI requires a network connection between the two companies exchanging business documents.

EDI has provided great value to trading partners especially those in certain “EDI – ENABLED” industries such as retail, automotive, and petroleum. The advent of the internet has created a common information and communications platform upon which business can be conducted. Internet provides the communications. Capabilities of EDI over a Value-Added network at a much lower price.

The EDI process looks like this — no paper, no people involved:

EDI architecture specifies 4 layers:-

- 1) Semantic (application layer)
- 2) Standard transaction layer
- 3) Packing (transport) layer
- 4) Physical n/w infrastructure layer.

1) Semantic layer:- It describes the business application that is driving EDI.

For a procurement application, this translates into requests for quotes, price quotes, purchase orders, acknowledgements & invoices. The information seen at this layer must be translated from a company specific form to a more generic form so that it can be sent to various trading partners, who could be using a variety of software applications at this end. When a trading partner sends a document, the EDI translation software converts the proprietary format into a standard mutually agreed on by the processing system. When a company receives the document, their EDI translation software automatically changes the standard format into proprietary format of their document processing software so that company can manipulate the information in whatever way it chooses to.

2. EDI standards:- It specifies business form structure and it also influences the content at application layer.

3. The most two important standards are:-

- EDIPACT
- ANSI X12

3. EDI transport layer:- it corresponds closely with the non-electronic activity of sending a business form from one company A to company B. The business form could be sent via regular postal service, registered mail, certified mail or private carrier such as United Parcel Service (UPS) or simply faxed between the companies. EDI semantic layer application level services

EDI standard layer EDIFACT

ANSI X12

EDI transport layer e-mail X 435

Point2point FTP

www HTTP

4.Physical layer :- Dial up lines

Virtual payment system:-

VPS offers easy to use, simple to set up payment processing solutions. While we can process payments for almost any company, we are especially good at providing service to law firms, education, retail, restaurants and software as a service providers.

Innovative – VPS is built to bring electronic processing to new markets. For example, we've built a system for law firms that allows operating and trust account payments to be made with a credit card. As a result, law firms can now offer to accept credit card payments when they could only do so by breaking their bar association's rules, violating their merchant agreement or losing money on every electronic transaction.

Secure – Transactions are electronically secure and where merchant accounts are financially secure at FDIC insured banks.

Easy – Making payments and managing your merchant account is as easy as possible.

Q5.

a)Firewall:-

In computing, a firewall is a software or hardware-based network security system that controls the incoming and outgoing network traffic based on applied rule set. A firewall establishes a barrier between a trusted, secure internal network and another network (e.g., the Internet) that is not assumed to be secure and trusted.[1]

Many personal computer operating systems include software-based firewalls to protect against threats from the public Internet. Many routers that pass data between networks contain firewall components and, conversely, many firewalls can perform basic routing functions.[2]

b)

An ERP system covers the following common functional areas. In many ERP systems these are called and grouped together as ERP modules:

? Financial accounting: General ledger, fixed asset, payables including vouchering, matching and payment, receivables cash application and collections, cash management, financial consolidation

? Management accounting: Budgeting, costing, cost management, activity based costing

? Human resources: Recruiting, training, payroll, benefits, 401K, diversity management, retirement, separation

? Manufacturing: Engineering, bill of materials, work orders, scheduling, capacity, workflow management, quality control, manufacturing process, manufacturing projects, manufacturing flow, product life cycle management

? Order Processing: Order to cash, order entry, credit checking, pricing, available to promise, inventory, shipping, sales analysis and reporting, sales commissioning.

? Supply chain management: Supply chain planning, supplier scheduling, product configurator, order to cash, purchasing, inventory, claim processing, warehousing (receiving, putaway, picking and packing).

? Project management: Project planning, resource planning, project costing, work break down structure, billing, time and expense, performance units, activity management

? Customer relationship management: Sales and marketing, commissions, service, customer contact, call center support - CRM systems are not always considered part of ERP systems but rather Business Support systems (BSS).

? Data services : Various "self-service" interfaces for customers, suppliers and/or employees

Human resources: it is the set of individuals who make up the workforce of an organization, business sector, or economy. "Human capital" is sometimes used synonymously with human resources, although human capital typically refers to a more narrow view (i.e., the knowledge the individuals embody and can contribute to an organization). Likewise, other terms sometimes used include "manpower", "talent", "labour", or simply "people".

The professional discipline and business function that oversees an organization's human resources is called human resource management (HRM, or simply HR).

The process in practice:-

From the corporate objective, employees have been traditionally viewed as assets to the enterprise, whose value is enhanced by further learning and development, referred to as human resource development. [1]Organizations will engage in a broad range of human resource management practices to capitalize on those assets.

In governing human resources, three major trends are typically considered:

1. Demographics: the characteristics of a population/workforce, for example, age, gender or social class. This type of trend may have an effect in relation to pension offerings, insurance packages etc.
2. Diversity: the variation within the population/workplace. Changes in society now mean that a larger proportion of organizations are made up of "baby-boomers" or older employees in comparison to thirty years ago. Advocates of "workplace diversity" advocate an employee base that is a mirror reflection of the make-up of society insofar as race, gender, sexual orientation etc.
3. Skills and qualifications: as industries move from manual to more managerial professions so does the need for more highly skilled graduates. If the market is "tight" (i.e. not enough staff for the

jobs), employers must compete for employees by offering financial rewards, community investment, etc.

Q7. Online Analytical Processing (OLAP) databases facilitate business-intelligence queries. OLAP is a database technology that has been optimized for querying and reporting, instead of processing transactions. The source data for OLAP is Online Transactional Processing (OLTP) databases that are commonly stored in data warehouses. OLAP data is derived from this historical data, and aggregated into structures that permit sophisticated analysis. OLAP data is also organized hierarchically and stored in cubes instead of tables. It is a sophisticated technology that uses multidimensional structures to provide rapid access to data for analysis. This organization makes it easy for a PivotTable report or PivotChart report to display high-level summaries, such as sales totals across an entire country or region, and also display the details for sites where sales are particularly strong or weak.

OLAP databases are designed to speed up the retrieval of data. Because the OLAP server, rather than Microsoft Office Excel, computes the summarized values, less data needs to be sent to Excel when you create or change a report. This approach enables you to work with much larger amounts of source data than you could if the data were organized in a traditional database, where Excel retrieves all of the individual records and then calculates the summarized values.

The following table summarizes the major differences between OLTP and OLAP system design.

	OLTP	OLAP
Source of data	Operational data; OLTPs are the original source of the data.	Consolidation data; OLAP data comes from the various OLTP Databases
Purpose of data	To control and run fundamental business tasks and decisionsupport	To help with planning, problem solving, and decisionsupport
What the data reveals	Reveals a snapshot of ongoing business processes of various kinds of business activities	Multi-dimensional views of various kinds of business activities
Inserts and Updates	Short and fast inserts and updates initiated by end users	Periodic long-running batch jobs refresh the data
Queries	Relatively standardized and simple queries	Returning relatively few records Often complex queries involving aggregations
Processing Speed	Typically very fast	Depends on the amount of data involved; batch data refreshes and complex queries may take many hours; query speed can be improved by creating indexes

Space Requirements Can be relatively small if historical data is archived Larger due to the existence of aggregation structures and history data; requires more indexes than OLTP

Database Design

Highly normalized with many tables Typically de-normalized with fewer tables; use of star and/or snowflake schemas

Q8. MIS (management information systems) is a general term for the computer systems in an enterprise that provide information about its business operations. It's also used to refer to the people who manage these systems. Typically, in a large corporation, "MIS" or the "MIS department" refers to a central or centrally-coordinated system of computer expertise and management, often including mainframe systems but also including by extension the corporation's entire network of computer resources.

DSS(Decision Support System): A computerized information system used to support decision-making in an organization or business. A DSS enables users to sift through and analyze massive reams of data and compile information that can be used to solve problems and make better decisions.

The benefits of decision support systems include more informed decision-making, timely problem solving, improved efficiency and better learning. A DSS can compile and present information for many aspects of a business, including sales trends, actual versus projected sales, worker productivity, profitability mix and so on.

Information System(IS):- An Information System (IS) is any combination of information technology and people's activities using that technology to support operations, management, and decision-making. In a very broad sense, the term information system is frequently used to refer to the interaction between people, algorithmic processes, data and technology. In this sense, the term is used to refer not only to the information and communication technology (ICT) an organization uses, but also to the way in which people interact with this technology in support of business processes. Some make a clear distinction between information systems, ICT and business processes. Information systems are distinct from information technology in that an information system is typically seen as having an ICT component. Information systems are also different from business processes. Information systems help to control the performance of business processes.

Database System:- A database system is a term that is typically used to encapsulate the constructs of a data model, database Management system (DBMS) and database. A database is an organised pool of logically-related data. Data is stored within the data structures of the database. A DBMS is a suite of computer software providing the interface between users and a database or databases. A DBMS is a

shell which surrounds a database or series of databases and through which all interactions take place with the database. The interactions catered for by most existing DBMS fall into 4 main groups:

- * Data Definition. Defining new data structures for a database, removing data structures from the database, modifying the structure of existing data.
- * Data Maintenance. Inserting new data into existing data structures, updating data in existing data structures, deleting data from existing data structures.
- * Data Retrieval. Querying existing data by end-users and extracting data for use by application programs.
- * Data Control. Creating and monitoring users of the database, restricting access to data in the database and monitoring the performance of databases.

Both a database and its DBMS conform to the principles of a particular data model [2]. Data models include the hierarchical data model, the network data model, the relational data model and the object-oriented data model.

Q9. (a) Third-party authentication allows users to log in to SGD if they have been authenticated by an external mechanism.

If you are using the SGD webtop, the only form of third-party authentication you can use is web server authentication. If you develop your own webtop applications using the SGD web services, you can use any third-party authentication mechanism.

Third-party authentication is disabled by default.

How Third-party Authentication Works:

The user types in a username and password directly to the external mechanism, typically using their web browser's authentication dialog.

Third-party authentication is based on trust. SGD trusts that the third-party mechanism has authenticated the user correctly and so they are authenticated to SGD.

Next SGD performs a search to establish the user identity and user profile (see the following section). If the searches do not produce a match, SGD cannot establish an identity for the user and the user cannot log in. SGD displays the standard login page so that the user can log in using system authentication.

Q9. (b) A private network provider hired by a company to facilitate electronic data interchange (EDI) and/or provide other network services such as message encryption, secure email and management reporting. A Value-Added Network (VAN) simplifies the communications process by reducing the number of parties with which a company needs to communicate. The VAN accomplishes this by acting as an intermediary between business partners that share standards based or proprietary data. VANS

may be operated by large companies for efficient supply chain management with their suppliers, or by industry consortiums or telcos.

VANs usually operate in a mailbox setting, wherein a company sends a transaction to a VAN and the VAN places it in the receiver's mailbox. The receiver contacts the VAN and picks up the transaction, and then sends a transaction of its own. The system is similar to email, except that it is used for standardized structured data rather than unstructured text.

Q9. (c) Supply chain management is the streamlining of a business' supply-side activities to maximize customer value and to gain a competitive advantage in the marketplace. Supply chain management (SCM) represents an effort by suppliers to develop and implement supply chains that are as efficient and economical as possible. Supply chains cover everything from production, to product development, to the information systems needed to direct these undertakings.

Q9. (d) Just-in-time manufacturing was a concept introduced to the United States by the Ford motor company. It works on a demand-pull basis, contrary to hitherto used techniques, which worked on a production-push basis.

To elaborate further, under just-in-time manufacturing (colloquially referred to as JIT production systems), actual orders dictate what should be manufactured, so that the exact quantity is produced at the exact time that is required.

Just-in-time manufacturing goes hand in hand with concepts such as Kanban, continuous improvement and total quality management (TQM).

Just-in-time production requires intricate planning in terms of procurement policies and the manufacturing process if its implementation is to be a success.

Highly advanced technological support systems provide the necessary back-up that Just-in-time manufacturing demands with production scheduling software and electronic data interchange being the most sought after.

Advantages Just-In-Time Systems

Following are the advantages of Adopting Just-In-Time Manufacturing Systems:

? Just-in-time manufacturing keeps stock holding costs to a bare minimum. The release of storage space results in better utilization of space and thereby bears a favorable impact on the rent paid and on any insurance premiums that would otherwise need to be made.

? Just-in-time manufacturing eliminates waste, as out-of-date or expired products; do not enter into this equation at all.

? As under this technique, only essential stocks are obtained, less working capital is required to finance procurement. Here, a minimum re-order level is set, and only once that mark is reached, fresh stocks are ordered making this a boon to inventory management too.

? Due to the aforementioned low level of stocks held, the organizations return on investment (referred to as ROI, in management parlance) would generally be high.

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