TYPICAL QUESTIONS & ANSWERS

OBJECTIVE TYPE QUESTIONS

Each question carries 2 marks.

Choose the correct or best alternative in the following:

Q.1   Which of the following is not an scripting language ?

       (A)   HTML   **(B)**   XML
       (C)   Postscript   **(D)**   Javascript

      Ans: C   Postscript

Q.2   Which of the following is a platform free language

       (A)   Fortran   **(B)**   Assembly
       (C)   C   **(D)**   Java

      Ans: D   Java

Q.3   A digital signature is

       (A) scanned signature   **(B)** signature in binary form
       (C) encrypting information   **(D**) handwritten signature

      Ans: C   encrypting information

Q.4   Mechanism to protect private networks from outside attack is

       (A) Firewall   **(B**) Antivirus
       (C) Digital signature   **(D)** Formatting

      Ans: A   Firewall

Q.5   A computer system that permits multiple users to run programs at same time

       (A) Real time system   **(B)** Multi programming system
       (C) Time sharing system   **(D)** Multi tasking system

      Ans: D   Multi tasking system

Q.6 A computer communication technology that provides a way to interconnect multiple computer across short distance is

      (A) LAN   **(B)** MAN
      (C) WAN   **(D)** Wireless network

    Ans: A   LAN

Q.7 Telnet is a service that runs

      (A) Television on net   **(B)** Remote program
      (C) Cable TV network   **(D**) Telenext

    Ans: B   Remote program

Q.8. A device that forwards data packet from one network to another is called a

      (A) Bridge   **(B)** Switch
      (C) Hub   **(D)** Gateway

    Ans: B   Switch

Q.9 Which of the following is the fastest media of data transfer

      (A) Co-axial Cable   **(B)** Untwisted Wire
      (C) Telephone Lines   **(D)** Fibre Optic

    Ans: D   Fiber Optic.

Q.10 Tool that is used to transfer data/files among computers on the Internet

      (A) FTP   **(B)** Archie
      (C) TCP   **(D)** Gopher

    Ans: C   TCP

Q.11 HTML is a

      (A) Programming Language   **(B)** Scripting Language
      (C) Web Browser   **(D)** Network Protocol

    Ans: B   Scripting Language

Q.12 Secret-key encryption is also known as

       (A) Asymmetric encryption   **(B)** Symmetric encryption
       (C) Secret-encryption   **(D)** Private encryption

    Ans: D   Private encryption

Q.13 The concept of electronic cash is to execute payment by

       (A) Credit Card   **(B)** ATM Card
       (C) Using computers over network   **(D)** Cheque

    Ans: C   Using computers over network.

Q.14 SMTP is a

       (A) Networking Protocol
       (B) Protocol used for transferring message between end user &
           Mail Server
       (C) Protocol used for smart card message interchange
       (D) Encryption Standard

    Ans: B   Protocol used for transferring message between end user & Mail   Server.

Q.15 Digital Signature is

       (A) Scanned Signature on Computer
       (B) Code number of the sender.
       (C) Public Key Encryption.
       (D) Software to recognize signature.

    Ans: D   Software to recognize signature

Q.16 Telnet is a

       (A) Network of Telephones   **(B)** Television Network
       (C) Remote Login   **(D)** Remote Login.

    Ans: C   Remote Login.

Q.17 The internet is

       (A) Network of networks   **(B)** Web site.
       (C) Host   **(D)** Server

    Ans: A   Network of networks

Q.18 An e-business that allows consumer to name their own price for products
and services is following which e-business model?

  (A) B2B   **(B)** B2G
  (C) C2C   **(D)** C2B

  Ans: D   C2B

Q.19 Kerberos is an encryption-based system that uses

  (A) Secret key encryption   **(B)** Public key encryption
  (C) Private key encryption   **(D)** Data key encryption

  Ans: A   Secret key encryption.

Q.19 The method(s) of payment for online consumers are

  (A) Electronic cash   **(B)** Credit/debit
  (C) Electronic checks   **(D)** All of the above

  Ans: D   All of the Above.

Q.20 DNS is

  (A) The distributed hierarchical naming system
  (B) The vertical naming system
  (C) The horizontal naming system
  (D) The client server system

  Ans: C   The horizontal naming system.

Q.21 A firewall is

  (A) An established network performance reference point.
  (B) Software or hardware used to isolate a private network from a public network.
  (C) A virus that infects macros.
  (D) A predefined encryption key used to encrypt and decrypt data transmissions.

  Ans: B   Software or hardware used to isolate a private network from a public network.

Q.22 A router

  (A) Screens incoming information.
  (B) Distributes information between networks
  (C) Clears all viruses from a computer system
  (D) Is a work virus.

  Ans: B   Distributes information between networks

Q.23 LDAP stands for

    (A) Light weight Data Access Protocol.
    (B) Light weight Directory Access Protocol.
    (C) Large Data Access Protocol.
    (D) Large Directory Access Protocol.

    Ans: B -> Light weight Directory Access Protocol.

Q.24 E-Commerce is not suitable for

    (A) Sale/Purchase of expensive jewellery and antiques.
    (B) Sale/Purchase of mobile phones.
    (C) Sale/Purchase of branded clothes.
    (D) Online job searching.

    Ans: D Online job searching

Q.25 Amazon.com comes under the following model

    (A) B2B   **(B)** B2C
    (C) C2C   **(D)** C2B

    Ans: B B2C

Q.26 Hubs are present in the network

    (A) to diagnose line failures, measure and manage traffic flow and simplify re configuring of LANs.
    (B) to interconnect the LAN with WANs.
    (C) to interconnect the WANs with WANs.
    (D) to interconnect the WANs with LANs.

    Ans: B   to interconnect the LAN with WANs.

Q.27 Firewalls operate by

    (A) The pre-purchase phase.
    (B) isolating Intranet from Extranet.
    (C) Screening packets to/from the Network and provide controllable filtering of network traffic.
    (D) None of the above.

    Ans: C   Screening packets to/from the Network and provide controllable filtering of network traffic.

Q.28 The mercantile process model consists of the following pahase(s):

    (A)   The pre-purchase phase.
    (B)   Purchase consummation phase.
    (C)   Post-purchase Interaction phase.
    (D)   All of the above.

    Ans: D   All of the Above.

Each Question carries 1 mark.

State which of the statement is true and which are false. Write 'T' or 'F' in the answer book.

Q.29 One disadvantage to online buyers is lack of trust when dealing with unfamiliar sellers

TRUE		FALSE

    Ans: T
        Lack of trust is there obviously as buyer cannot physically see the seller. As Trust is a qualitative function, it develops with time & goodwill.

Q.30 Multimedia contents are not important to e-business applications.

TRUE		FALSE

    Ans: F   Rather Multimedia contents are most important as visual graphics & animations form the core of e-business applications.

Q.31 While making payment using electronic check, credit and debit cards, the server authenticates the customers and verifies with the bank that funds are adequate before purchase.

TRUE		FALSE

    Ans: T   The server authenticates that the customer has enough available balance to carry out transaction.

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Q.32 Trojan horse is a program that performs not only a desired task but also includes unexpected malicious functions

TRUE	FALSE

Ans: T   Trojan horse is a program that performs not only a desired task but also includes unexpected malicious functions.

Q.33 Home Banking is not an example of consumer oriented applications

TRUE	FALSE

Ans: F   Home Banking is one of the most important examples of consumer-oriented applications as using Home Banking business is carried out just by sitting at home.

Q.34 Electronic checks are another form of electronic tokens.

TRUE	FALSE

Ans: T   Electronic checks is a part of e-token. When giving e-token some authorizing co. verifies that the no. is active i.e. its run by Certifying authority (CA),Verifying Authority(VA) & Digital Signature(DS).

DESCRIPTIVES

Q.1 a. Define e-commerce? What are the benefits of using e-commerce?   **(7)**

Ans:

The term 'electronic commerce' has evolved from electronic shopping, to imply all aspects of business and market processes enabled by the Internet and World Wide Web technologies.

According to Philip Kotler :
E-commerce can be defined as a general term for buying and selling process that is supported by electronic means.

Electronic commerce, also known as e-business, a term for all kinds of business that are established electronically especially over the Internet. This includes both electronic sale (internet shops) and B2B transactions, i.e. business between two companies. It is any on-line transaction of buying and selling where business is done via Electronic Data Interchange (EDI). E-Commerce can be defined from different perspectives – **1.** Communications perspective, **2.** Business process perspective, **3.** Service perspective and **4.** Online perspective.

Basic Benefits of E-Commerce
The major benefits are increasing sales and decreasing costs. The other benefits are as follows:

1. Increased accessibility to customers

i)Allows people to carry out operations without barriers of time i.e. 24 hours a day, seven days a week.
ii) To reach out to global consumers easily and is also cost effective.
iii) It helps business to reach out new markets.
iv) Consumers and suppliers can be directly approached over the Internet.
v) Acquisition of new consumers over the internet is considerably cheaper..

2. **Convenience of making comparisons:**
E-commerce helps consumers to make comparisons while shopping . Automated online shopping assistants called hopbots score are available to find deals on anything from flowers to perfume

3. Increased Profitability
i) The direct cost to sale for an order taken from an web site is lower as compared to traditional means. Moreover processing errors are virtually eliminated in e-selling besides being faster and more convenient to visitor.
ii) It provides the solution by decimating the costs, which are incurred.

4. Innovation:
E-commerce enables business organization to create new products or services.

5.Improvement in consumer service:
There is a direct benefit in improvement of consumer service. High levels of customer satisfaction generate increased sales and increased profits.

6. Tangible advantages:
From the buyer's perspective e-commerce provides a lot of tangible advantages:
i. Reduction in buyers sorting out time
ii Better buyer decisions.
iii.Less time spent in resolving invoice and order discrepencies.
iv. Increased opportunities for buying alternative products.

7. Stratergic Benefits:
It helps to reduce delivery time,labour cost and also the cost incurred in the following areas:
i)   Document prepration.
ii) Error detection and correction.
iii) Reconciliation.
iv) Mail Prepration.
v) Telephone calling.
vi) Data Entry.
vii)Overtime.
viii)Supervision Expenses.

b.   What do you mean by the followed types of e-commerce   **(7)**
          i) B2B (Business to Business)   **ii)** B2C (Business to Customer

Ans:

(i) B2B - Business to Business

It is a mode of conducting business between two or more companies over the Internet, rather than more traditional modes such as telephone, mail, and face to face.

In the past EDI was conducted on a direct link of some form between the two businesses where as today the most popular connection is the Internet.

The two businesses pass information electronically to each other. B2B e-commerce currently makes up about 94% of all e-commerce transactions.

Some of the advantages of B2B are:

i) Improved customer satisfaction

ii) Improved inventory system
iii) Easy and cost effective marketing
iv) Coordination between manufacturers, distributors and dealers.
v) Better management of business

(ii) B2C -Business to Consumer

This is where the consumer accesses the system of the supplier. It is still a two-way function but is usually done solely through the Internet.

In B2C e-commerce companies sell goods to consumers online in a dynamic environment. Each transaction under B2C represents an individual buying online.

Some examples:- Conducting individual stock trades, a co. offering lots of books for sale on its web site.

An example of B2C model is Amul.com which sells Amul branded products online.

Q.2   **b.**   Discuss in brief the following terms
      i) Telnet   **ii)** http (hypertext transfer protocol)   **iii)** Remote login   **(3 x 3)**

     Ans:

i) Telnet:
It is a terminal emulation program for TCP/IP networks such as the Internet. The Telnet program runs on your computer and connects your PC to a server on the network. One can then enter commands through the Telnet program and they will be executed as if you were entering them directly on the server console. This enables one to control the server and communicate with other servers on the network. To start a Telnet session, one must log in to a server by entering a valid username and password. Telnet is a common way to remotely control Web servers.

(ii) Http :
Hyper Text Transfer Protocol; The WWW protocol that performs the request and retrieve functions of a server. Commonly seen as the first part of a website address.
It is the communication protocol used to connect to servers on the World Wide Web. The primary function of HTTP is to establish a connection with a Web server and transmit HTML pages to the user's browser.

(iii) Remote Login
A login that allows a user terminal to connect to a host computer via a network or direct telecommunications link, and to interact with that host computer as if the user terminal were directly connected to that host computer.

Gives the same functionality of telnet, with the added functionality of not requiring a password from trusted clients, which can also create security concerns.
Protocols such as TELNET and RLOGIN were developed for terminal users to use their terminals as if they were directly connected to a remote system. UNIX systems, with their predominately terminal-oriented interface, still make heavy use of these protocols.

Q.3   **a.**   Explain briefly how firewalls protect network.   **(7)**

Ans

A firewall is simply a program or hardware device that filters the information coming through the Internet connection into your private network or computer system. If an incoming packet of information is flagged by the filters, it is not allowed through the network.

A firewall gives a company tremendous control over how people use the network.

Firewalls use one or more of three methods to control traffic flowing in and out of the network:

- **Packet filtering** - Packets (small chunks of data) are analyzed against a set of **filters**. Packets that make it through the filters are sent to the requesting system and all others are discarded.
- **Proxy service** - Information from the Internet is retrieved by the firewall and then sent to the requesting system and vice versa
- **Stateful inspection** - A newer method that doesn't examine the contents of each packet but instead compares certain key parts of the packet to a database of trusted information.

b.   Explain the use of SSL to secure the network.   **(7)**

Ans:

SSL (*Secure Sockets Layer),* is a protocol developed by Netscape for transmitting private documents via the Internet. SSL works by using a private key to encrypt data that's transferred over the SSL connection. Both Netscape Navigator and Internet Explorer support SSL, and many Web sites use the protocol to obtain confidential user information, such as credit card numbers.

The SSL standard is not a single protocol, but rather a set of accepted data transfer routines that are designed to protect the integrity of transmitted messages.

SSL relies on certificates - digital identification cards - and keys.

Two types of keys are used as ciphers to encrypt and decrypt data. Private keys are issued to entities and are never given out. Public keys are given out freely. Both keys are necessary for authentication routines. Data encrypted with the public key cannot be decrypted with the same key. The private key must be used.

Q.4   a.   Discuss the process of data mining?   What are the advantages of data mining.   **(5)**

Ans:

The process of data mining consists of three stages:

(1)The initial exploration

(2) Model building or pattern identification with validation/verification,

(3) Deployment (i.e., the application of the model to new data in order to generate predictions).

Stage 1: Exploration. This stage usually starts with data preparation which may involve cleaning data, data transformations, selecting subsets of records and - in case of data sets with large numbers of variables ("fields") - performing some preliminary feature selection operations to bring the number of variables to a manageable range (depending on the statistical methods which are being considered).

Stage 2: Model building and validation. This stage involves considering various models and choosing the best one based on their predictive performance (i.e., explaining the variability in question and producing stable results across samples).

There are a variety of techniques developed to achieve that goal - many of which are based on so-called "competitive evaluation of models," that is, applying different models to the same data set and then comparing their performance to choose the best.

Stage 3: Deployment. That final stage involves using the model selected as best in the previous stage and applying it to new data in order to generate predictions or estimates of the expected outcome.

Advantages offered by Data Mining :

1. Facilitates discovery of knowledge from large, massive data sets.
2. Can be used within different application areas via. Fraud detection, risk assessment , market analysis and customer segmentation etc.
3. Technique to develop effective CRM applications.
4. Returns best results when used within data warehouse environment.
5. Used extensively in telecommunications, retail and banking & finance industry.

b.   Explain the use of following devices used in networking   **(3 x 3)**
          i) Digital Switches   **ii)** Routers   **iii)** Ramps

Ans:

(i) Digital switch
It is a device that handles digital signals generated at or passed through a telephone company's central office and forwards them across the company's backbone network.

It receives the digital signal from the office's channels banks that have been converted from users' analog signals and switches them with other incoming signals out to the wide area network.

(ii) Router
A router is used to route (transfer) data between two or more similar networks.
It determines the next network point to which a data packet should be forwarded. The router is connected to at least two networks and determines which way to send each data packet based on its current understanding of the state of the networks it is connected to. Routers create or maintain a table of available routes and use this information to determine the best route for a given data packet.

(iii) Ramps
A network planning method that makes the most efficient use of manpower, materials and cash resources among several projects going on simultaneously.

Q.5   a.   Explain network security. What are the types of security features used in client server
          types of network?   **(7)**

Ans:
Network security means the protection of networks and their services from unauthorized access, modification, destruction or disclosure. It provides for assurance that a network performs its critical functions correctly and there are no harmful side effects.

Security features used in Client-Server types of network are as follows :

i)   Digital Signatures

ii) Encryption / Decryption

iii) Secure Socket Layer (SSL)

iv) Firewalls.

b. What is Public Key Cryptography? What are its advantages and disadvantages? **(7)**

Ans:
    Public-key cryptography is a form of modern cryptography which allows users to communicate safely without previously agreeing on a shared secret key

    There are a number of significant practical difficulties in this approach to distributing keys.

    Public-key cryptography was invented to address these drawbacks — with public-key cryptography, users can communicate with safety over an insecure channel without having to agree upon a key beforehand.

    Public-key algorithms typically use a pair of two related keys — one key is private and must be kept secret, while the other is made public and can be widely distributed; it should not be possible to deduce one key of a pair given the other.

    Advantages
    (i) Increased security and convenience

    (ii) Electronic records may be authenticated by affixing digital signatures

    Disadvantages
    Used to encrypt a secret key which is used to encrypt the bulk of a file or message. Such a protocol is called a digital envelope

    Public-key cryptography is not necessary and secret-key cryptography alone is sufficient. This includes environments where secure secret-key agreement can take place, for example by users meeting in private.

Q.6 **a.** Explain the application of E-Commerce in any one of the following fields
      i) Home banking **ii)** Home Entertainment   **iii**) Home Shopping   **(3 x 3)**

    Ans:

    i) Home Banking:

    E-commerce is used in Home Banking as one call or one click.
    Online banking (Internet banking) is a term used for performing transactions, payments etc. over the internet through a bank's secure website.
    This can be very useful, especially for banking outside bank hours (which tend to be very short) and banking from anywhere where internet access is available.

ii)   Home Entertainment:

E-commerce has led to HOME ENTERTAINMENT. The video aspect usually involves a large-screen and/or high definition television or a projection system.

"Home cinema" has become something of a buzzword. Technically, a home cinema could be as basic as a simple arrangement of a Television, VCR, and a set of speakers. It is therefore difficult to specify exactly what distinguishes a "home cinema" from a "television and stereo".

iii)   Home Shopping

TV broadcast of goods for purchase, sent directly to a viewer . This online shopping is available due to e-commerce.

b.   Differentiate between data warehousing and data mining.   **(5)**

Ans:

Data warehouse means

- Subject oriented
- Integrated
- Time variant
- Nonvolatile collection of data for management's decisions.

It contains the bedrock data that forms the single source for all DSS processing. Data warehouses contain historical data and detailed data, they are eternally large.

Different types of data warehouses.
- Financial Data Warehouses
- Insurance Data Warehouses
- Human Resources Data Warehouses
- Global Data Warehouses

Data Mining is an analytic process designed to explore data and then to validate the findings by applying the detected patterns to new subsets of data. The ultimate goal of data mining is prediction. The process of data mining consists of three stages:

1. the initial exploration
2. model building
3. deployment

The difference between data warehousing and data mining is that data warehousing refers to the data storage whereas data mining is a process of extracting useful knowledge from the data warehouse. Different techniques are used for implementation of these two concepts.

Q.7 a.   What is on electronic payment system? What are its types and advantages?   **(7)**

Ans:
Electronic payment systems are alternative cash credit payment methods using various electronic technologies to pay for products and services in electronic commerce.
Types: The most Internet payment method for B2C is credit cards.

The concern for customers is security while sending credit card information including name, card number and expiry date through Internet.

At present most of the companies use SSL (Secured Socket layer) protocol to provide security and privacy.
 Visa and MasterCard have jointly developed a more secure protocol, called SET (Secure Electronic Transmission)

Typical Electronic payment system for EC- Electronic credit card, EFT, debit card, stored-value card, and e-check.

Advantages

It provides good security schemes.
Four essential security requirements for safe e-payments are Authentication, Encryption, Integrity, and Nonrepudiation.

SET(Secure Electronic Transmission) which is theoretically a perfect protocol.

b.   Write notes on following
   i) E-Cash   **ii)** Electronic Cheques.   **(7)**

Ans:
i) E-Cash:

E-cash is cash represented by two models. One is the on-line form of e-cash (introduced by DigiCash) which allows for the completion of all types of internet transactions. The other form is off-line; essentially a digitially encoded card that could be used for many of the same transactions as cash.
The primary function of e-cash is to facilitate transactions on the Internet. Many of these transactions may be small in size and would not be cost efficient through other payment mediums such as credit cards

These types of payments, turning the Internet into a transaction oriented forum, require mediums that are easy, cheap (from a merchants perspective), private (see Privacy), and secure (see Security). Electronic Cash is the natural solution, and the companies that are pioneering these services claim that the products will meet the stated criteria.

ii) Electronic Cheques

Another mechanism for Internet payment is electronic cheques. With electronic cheques, the payer (either an individual consumer or a business) instructs his financial institution to pay a specific amount to another part, the payee.
A cheque in the electronic form means a cheque which contains the exact mirror image of a paper cheque, and is generated, written and signed by a secure system ensuring the minimum safety standards with the use of digital signature (with or without biometrics signature) and asymmetric crypto system

Q.8 a. Define EDI. Explain the layered architecture of EDI.   **(7)**

Ans:

Electronic Data Interchange (EDI) is used by organizations for transactions that occur on regular basis to a pre-determined format. It is one of the electronic commerce technologies.

It is used in number of trade sectors for inter-organization, regular, repeat transactions. These systems require EDI standards, EDI software, an EDI network and trading community.
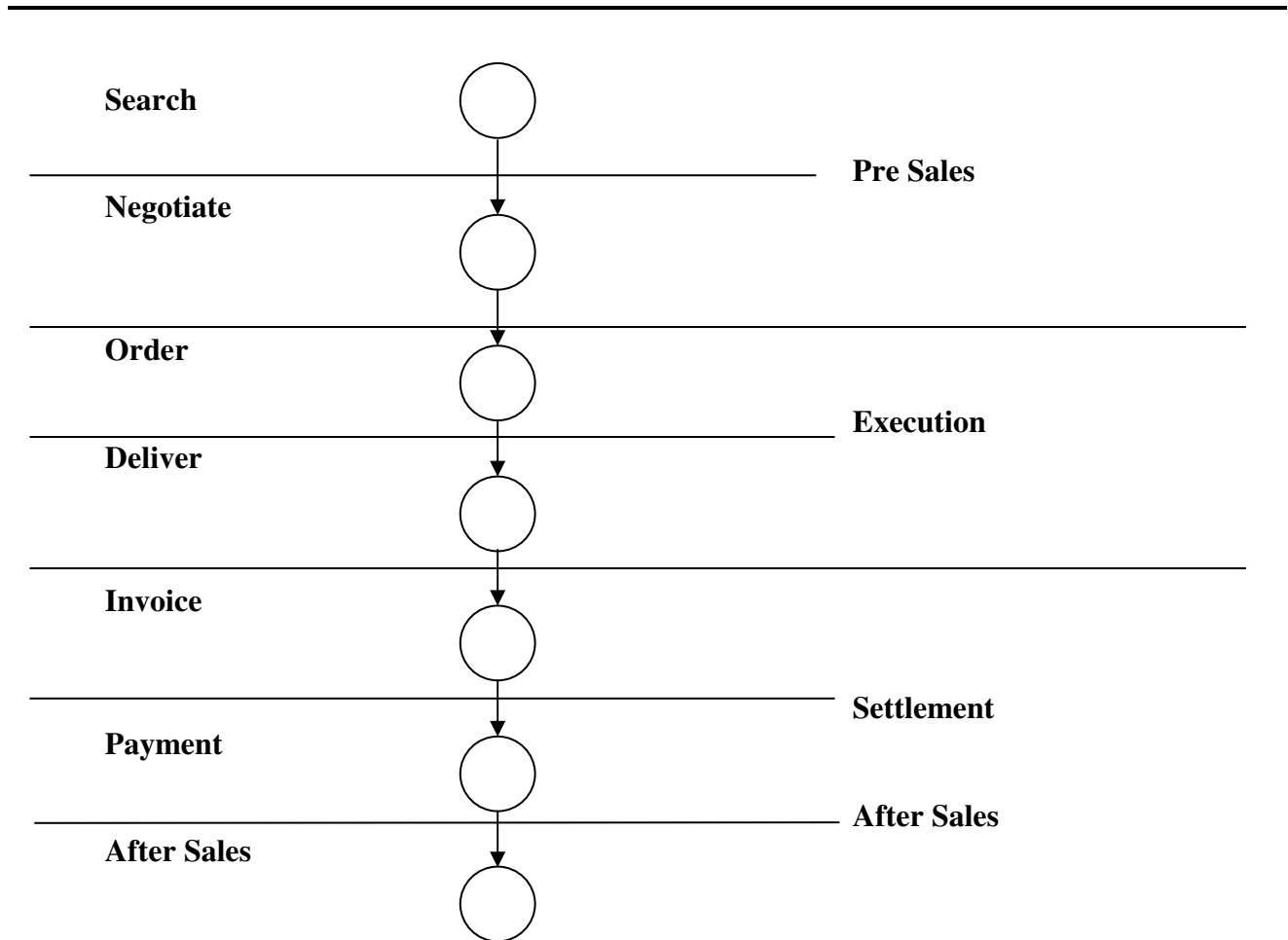
Layered Architecture of EDI:
EDI is most commonly applied in the Execution and settlement phases of the trade cycle. In execution of a simple trade exchange, the customers' orders can be sent by EDI and the delivery notification from the supplier can be electronic.

For settlement the supplier can use EDI to send the invoice and the customer can finish the cycle with an electronic funds transfer via the bank and an EDI payment notification to the supplier.

This whole cycle may be complex and other electronic messages can be included.

EDI can be used for Pre-Sales transactions; there have been EDI messages for transactions such as contract but are not wisely implemented.

EDI can be used for After -Sales transactions but only if they were in a standardized format and frequent enough to justify system costs, transactions such as dealer claiming payment for warrantee work could be possible application.

Search	◯	
		Pre Sales
Negotiate	◯	
Order	◯	
		Execution
Deliver	◯	
Invoice	◯	
		Settlement
Payment	◯	
		After Sales
After Sales	◯	

b.   What are the applications of EDI in business?   **(7)**

Ans:

A. Organistions that use EDI

Extensive users of EDI include:
BHS- is a UK and European retailer dealing mainly in apparel(fashion) goods.
Lucas Rist : manufacturers the 'main harness' for Rover Cars. All volume car
manufacturers make extensive use of EDI as a facilitator of just-in-time manufacturing
systems.

Teleordering: The EDI system for the book trade is called TeleOrdering.

B. EDI Trading Patterns

1. Hubs and Spokes

Many of the prime movers in the adoption of EDI have been large retail organizations, such as BHS and component assembly manufacturers such as the Rover Group.
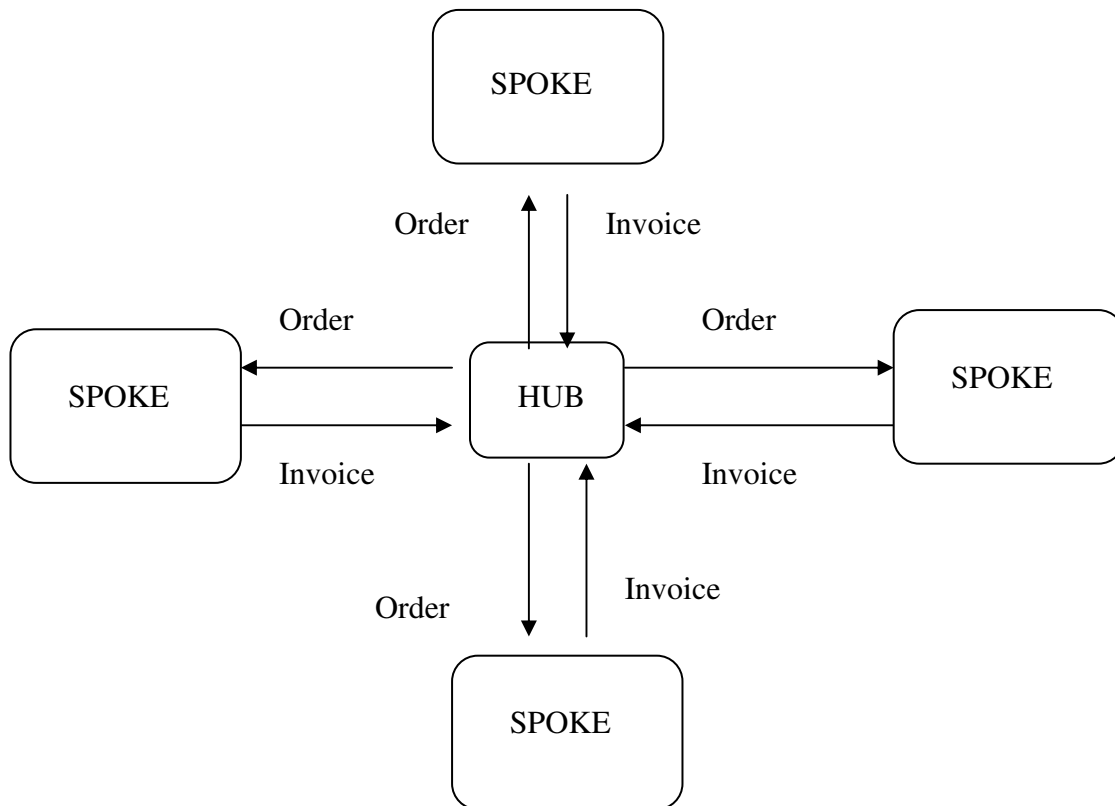
Hub and Spoke Trading Patterns

2. Overlapping User Communities

The user community looks like a hub and spoke network to the hub but more like a spider's web to the spoke organization , entrapped by the conflicting requirements of a no. of powerful and demanding customer's organizations.

Q.9   **a.** What is Organizational Structure? Differentiate between Vertical and Horizontal
organization.   **(7)**

Ans:

A business organization may be structured in many different ways, depending upon the environment within which it operates.

There are always problems with any organizational structure. Traditional organizations based on departments often tend to be bureaucratic and slow in distributing information, while organizations which are more aware of the external environment often lack the formality and control of the traditional organization.

Difference between Vertical and Horizontal Organization

Vertical Organizations

It is a traditional approach which is typified by a functional approach to work in which departments work on tasks relevant to their particular function.

The company is organized on a hierarchical basis with managers matching tasks with appropriate individuals.

When things go wrong, managers are so familiar with this type of organization that they know what questions to ask and what action to take

The main advantage of this kind of structure is seen as functional excellence

Coordination across tasks, departments and functions is the Limitation of Vertical Organizations.

Horizontal Organizations.

Main characteristics:

- The work is structured around a small number of business processes or work flows
- The activities of employees is linked to the needs and capabilities of suppliers and customers enhancing performance all round
- Work is done mainly by teams
- A flatter hierarchy replaces the old steeper functional hierarchy
- Management focus more on continuous improvement than the traditional management activities of decision making, evaluation and resource allocation

b. Explain the Structure of Virtual Enterprise.   **(7)**

Ans:
The virtual enterprise can be an appropriate structure to explore the emerging opportunities for creating value in the information society.

They also illustrate the impact of the virtual enterprise on specialization within an organization.

That is, when value drives the restructuring of virtual operations, a new pattern of specialization for the individual company can be expected.

Within the virtual network, specialized partners provide services.

Despite their contingent network-structure, virtual enterprises have to build up their own identity if they want to survive.

Q.10 a. Describe in brief the history of E-Commerce.   **(7)**

Ans:
History of E-commerce.
E-commerce began before personal computers were prevalent and has grown into a multi-billion dollar industry. By looking at the evolution of e-commerce, it will be easier to judge its trends for the future.

Year	Event
1984	EDI, or electronic data interchange, was standardized through ASC X12. This guaranteed that companies would be able to complete transactions with one another reliably.
1992	CompuServe offers online retail products to its customers. This gives people the first chance to buy things off their computer.
1994	Netscape arrived. Providing users a simple browser to surf the Internet and a safe online transaction technology called Secure Sockets Layer.
1995	Two of the biggest names in e-commerce are launched: Amazon.com and eBay.com.
1998	DSL, or Digital subscriber Line, provides fast, always-on Internet service to subscribers across California. This prompts people to spend more time, and money, online.
1999	Retail spending over the Internet reaches $20 billion, according to Business.com.
2000	The U.S government extended the moratorium on Internet taxes until at least 2005.

b. Explain briefly the generic framework for e-commerce.   **(7)**

Ans:

Generic framework of e-commerce includes the Applications of EC
(such as banking, shopping in online stores and malls, buying stocks, finding a job, conducting an auction, and collaborating electronically on research and development projects). To execute these applications, it is necessary to have Supporting Information and Organizational Infrastructure and System, which includes

- Common Business Services Infrastructure (security smart cards/authentication, electronic payment, directories/catalogs)
- Messaging and Information Distribution Infrastructure (EDI, e-mail, Hypertext Transfer Protocol)
- Multimedia Content and Network Publishing Infrastructure (HTML, Java, World Wide Web, VRML)
- Network Infrastructure (Telecom, cable TV, wireless, Internet, VAN, WAN, LAN, Intranet, Extranet) And their implementation is dependent on four major areas as supporting pillars:
- People (Buyers, Sellers, Intermediaries services, IS People, and Management),
- Public policy (Taxes, Legal, Privacy Issues, Free Speech, Domain Names)
- Technical Standards (for Documents, Security and Network Protocols, Payments)
- Organizations (Partners, competitors, Associations, Govt. Services)

The EC management coordinates the applications, Infrastructures and pillars.

Q.11 a. What are the features of Client/Server Computing? How do TP systems affect performance of e-commerce sites?   **(7)**

Ans:

Although there are various different configurations, different hardware and software platforms and even different network protocols in Client-Server Architecture, they all possess certain characteristics and features that distinguish them from traditional mainframe computing environment. Some of them are listed below:
- Consists of a networked webs of small and powerful machines (both servers and clients)
- Open Systems
- Modularity
- Cost Reduction and Better Utilization of Resources
- Complexity

Transaction Processing System affects performance of e-commerce sites

Transaction-Processing applications Typical OLTP (Online-Transaction Processing Applications), also known as mission-critical applications, include order entry, inventory, and point-of-sale systems

This kind of mission-critical system must run continuously, if it is unavailable even for a brief moment, the organizations will experience server repercussions.

Examples are stock exchange system, air traffic control networks and airline reservation systems.

In a simple client/server system, many clients issue requests and server responses.

b. What are IP addresses? How are IP addresses allocated to Computer?

(7)

Ans:

IP address refers to the name of a computer on a network, like the Internet.

- An Identifier for a computer or device on a TCP/IP network, like the Internet.
- The format of an IP address is a 32-bit numeric address written as four numbers separated by periods. Each number can be zero to 255.
- The IP addresses can be in different classes/categories.

CLASS A, CLASS B, CLASS C, CLASS D, CLASS E IP ADDRESSES ARE ALLOCATED AS FOLLOWS:
Every machine on the Internet has a unique identifying number, called an IP Address. A typical IP address looks like this:

216.27.61.137

To make it easier for us to remember, IP addresses are normally expressed in decimal format as a "dotted decimal number" like the one above. But computers communicate in binary form. Look at the same IP address in binary.

11011000.00011011.00111101.10001001

The four numbers in an IP address are called octets, because they each have eight positions when viewed in binary form. It can have two different states (1or0). If you add all the positions the total number of possible combinations per octet is 28 or 256. So each octet can contain any value between 0 and 255. Combine the four octets and you get 2342 or a possible 4,294,967,296 unique values:

There are five IP classes plus certain special addresses:

Default Network-The IP address of 0.0.0.0 is used for the default   network.

Class A- This class is for very large networks. IP addresses with a first octet from 1 to 126 are part of this class. The other three octets are used to identify each host. This means that there are 126 Class A networks each with 16,777,214 (2^{24}-2) possible hosts for a total of 2,147,483,648 (2^{31}) unique IP addresses. Class A networks account for half of the total available IP addresses. In class A networks, the high order bit value (the very first binary number) in the first octet is always 0.

Net   Host or Node
115   24.53.107

Loop back- The IP address 127.0.0.1 is used as the loop back address. This means that it is used by the host computer to
 send a message back to itself. It is commonly used for troubleshooting and network testing.

Class B- Class B is used for medium-sized networks. A good example is a large college campus. IP addresses with a first octet from 128 to 191 are part of this class. Class B addresses also include the second octet as part of the Net identifier. The other two octets are used to identify each host. This means that there are $16,384(2^{14})$ Class B networks each with 65, 534 $(2^{16}-2)$ possible hosts for a total of $1,073,741,824(2^{30})$ unique IP addresses. Class B networks make up a quarter of the total available IP addresses. Class B networks have a first bit value of 1 and a second bit value of 0 in the first octet.

Net   Host or Node
145.24   53.107

Class C- Class C addresses are commonly used for small to mid-size businesses. IP addresses with a first octet from 192 to 223 are part of this class. Class C addresses also include the second and third octets as part of the Net identifier. The last octet is used to identify each host. This means that there are $2,097,152(2^{21})$ Class C networks each with 254 (2^8-2) possible hosts for a total of $536,870,912$ (2^{29}) unique IP addresses. Class C Networks make up an eighth of the total available IP addresses. Class C networks have a first bit value of 1, second bit value of 1 and a third bit value of 0 in the first octet.

Net   Host or Node
195.24.53   107

Class E- Class E is used for experimental purposes only. Like Class D, it is different from the first three classes. It has a first bit value of 1, second bit value of 1, third bit value of 1 and fourth bit value of 1. The other 28 bits are used to identify the group of computers the multicast message is intended for. Class E accounts $1/16^{th}$ $(268,435,456,$ or $2^{28})$ of the available IP addresses.

Net   Host or Node
240   24.53.107

Broadcast- Message that are intended for all computers on a network are sent as broadcasts. These messages always use IP address 255.255.255

Q.12   Explain the role of World Wide Web in the field of e-commerce**.**   **(5)**

Ans:

In the 1990s, the advent of the World Wide Web on the Internet represented a turning point in e-commerce by providing an easy-to-use technological solution to the problems of information publishing and dissemination. The web made e-commerce a cheaper way of doing business and enabled more diverse business activities. Use of the Internet and web-site is to allow vendors and service providers to do business on-line. The Internet supports e-commerce and it also requires an infrastructure which allows customers to visit virtual shopping malls for items on sale. This concept was developed in 1999. E-commerce requires a secure way to transfer the money electronically.

Internet promotes e-selling in fraction of seconds. Thus, it promotes the growth of a customer base. It promotes interactive surveys. The users opinions can be gathered anywhere as it provides real time statistics to the uses.

Q.13   a.   What is non-repudiation? How can it be achived in designing e-cash based system? Give a suitable algorithm.   **(7)**

Ans:

Non Repudiation: Assurance that the sender is provided with proof of delivery and that the recipient is provided with proof of the sender's identity so that neither can later deny having processed the data.

E-cash is essentially an online solution. The buyer must validate the coins by the issuer in order to get the purchase done. The coins used in the system contain the value of the coin, the serial number that is unique for every coin and identity strings connecting the coin to the user withdrawing it. However, neither the issuer nor the merchant can deduce the identity of the customer by examining the coins if the coin is used only once.

The user of the e-cash system must have an account in a bank that's a certified eCash minter. The blind signature and secret splitting techniques are used, which ensures that the coins are anonymous until used twice. The suitable algorithm is RSA & DES.

The algorithm is as follows:

Key generation in RSA

1.   Select p, q where p and q are both prime and $p \neq q$ (private, chosen)
2.   Calculate $n = pXq$
3.   Calculate $\phi(n)=(p-1)(q-1)$ where n is public calculated and $\phi(n)$is Euler totient funtion
4.   Select integer e, with gcd $(\phi(n),e)=1$; $l<e<\phi(n)$ where e is public, chosen
5.   Calculate d where $d = e^{-1}mod\phi(n)$ and d is private, calculated
6.   Public key KU={e,n}
7.   Private key KR={d,n}

Encryption in RSA:

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Plaintext M where M<n
Ciphertext C where C=M^e (mod n)
Decryption in RSA:
Ciphertext C

Plaintext M where M = C^d(mod n)

b. Explain the use of the following terms:
    i) Public Key Encryption
    ii) Secret Key Encryption   **(7)**

Ans:
A cryptographic system that uses two-keys—a public key known to everyone and a private or secret key known only to the recipient of the message.

An important element to the public key system is that the public and private keys are related in such a way that only the public key can be used to encrypt messages and only the corresponding private key can be used to decrypt them. Moreover, it is virtually impossible to deduce the private key if you know the public key.

They are extremely secure and relatively simple to use.
These algorithms lead to several varieties of public key encryption(PKE). PKE addresses three issues that flaw many encryption schemes;
PKE is computationally difficult to decode.
PKE does not require a secure channel to send the key; the key is, in fact, public.

Q.14 **a.** How does an authentication system differ from a firewall in
functioning?   **(6)**

Ans:
Authentication vs firewall
User Authentication and Authorization

An important advanced firewall security feature is user-oriented authentication, which is the ability to allow or deny certain connections based on user name and password combination or some other, more advanced identification scheme.
Various authentication technologies are available. The simplest forms require typing a user name and a reusable password.
This method is suitable for controlling only outbound Internet access, because password guessing and eavesdropping attacks are likely on inbound access attempts.
Firewalls can log network activity in detail, filter the log to produce meaningful reports, and alert a network administrator when the network has reached a predefined threshold.

The firewall software supports at least Internet services:
HTTP
FTP

Gopher
SMTP
Telnet

DNS name resolution, preferably by letting you run DNS on the firewall and on an internal system.

b. Give the types of firewalls and explain any one type in detail.   **(8)**

Ans:
Conceptually, there are two types of firewalls:
1. Network Level
2. Application Level
Network Level Firewall/Packet Filters
The Network level firewalls operate on the mechanism of filtering individual IP packets using the routers.

Packet filters, called " access control lists" on Internet routers provide the rudimentary form of security.

Filters are configured to allow/discard packets based on attributes such as:

1. Specific source or destination IP addresses
2. Specific protocol types
3. Specific source or destination port numbers
4. TCP flags set/clear in the packet header

Q.15 a. What are the advantages of having e-commerce over extranets?   **(7)**

Ans:
Extranets are about " joining up" the supply chain-suppliers, resellers, distributors, customers, etc.-enabling business-to business eCommerce and streamlining production and sales process, e.g. through on-line ordering, order tracking and inventory management, and so can dramatically reduce costs in these areas. Business-to-business sales are expected to outstrip business-to-consumer sales as an Internet growth area.
The advantages and benefits to businesses include:
Less Paperwork- with documents and business processes on an Extranet, information and documents can be accessed, processed, downloaded (and if necessary printed out) on demand;
Lower Costs- reduction in need for costly meetings, 'phone calls and travel;
A single interface-the Web browser is the only interface required between you and your business partners, regardless of the computer systems being used;
Easy to use- Web browsers provide an intuitive, point-and-click interface
Up-to-date and timely information-Web-based documents can be updated easily, giving you and your business partners faster access to accurate information.
More efficient customer service- information, such as inventory levels, is easily accessible and available 24 hours a day, 7 days a week… in effect creating self-service customers.
Easy access-because Extranets use Internet technologies, information can be accessed from anywhere in the world, e.g. from a remote office.

b. What are the concerns for growth of e-commerce in India?   **(7)**

Ans:

Government as Facilitator for the growth of e-commerce has taken following steps:

- Promotion of competitive telecom/datacom/internet Infrastructure
- Development of suitable legal framework for E-Commerce
- Promoting SMEs as E-commerce Enterprises
- Security for E-commerce
- E-commerce & standards
- Help Indian Industry gain competitive advantage through E-Commerce
- Proactive role in WTO, WIPO and other multilateral organizations for Advantage India

Q.16 a. What is the significance of XML in EDI and electronic commerce?   **(7)**

Ans:

XML has been described as lightweight SGML

XML shows great promise for its inherent ability to allow a " document" to be marked up in a way that pieces of the document (object) are internally defined and then "nested" within other objects to show related attributes

XML tags also allow you to apply different style sheets, i.e., to create a Web site; create a CD-ROM publication; and create a printed source.

XML is on the horizon and offers new opportunities for managing content.

No doubt, the reusability of objects with XML is very attractive. XML may lead to powerful results by integrating the features of CORBA and HTTP. HTTP allows to build a system which is independent of the data being transferred. XML supports the data exchange format between the systems.
And, so is the promise of using XML as a standard for Electronic Data-Interchange (EDI).

b. Explain the features and utilities available in java, which makes it suitable for developing e-commerce applications.   **(7)**

Ans:

Following are the features and utilities available in JAVA which make it suitable for developing e-commerce applications:

1. In a network, the transmission of passive information and active programs are quite common between the server and a PC. Such programs can be very conveniently run on JAVA.

2. Java supports applet. An applet is an application designed to be transmitted over the Internet.

3. Java provides a high level security against risk of virus infection and malicious programs that can gather private information such as credit card number, bank balances etc. The security is assured by 'Fire walls'.

4. It is designed for distributed environment of the Internet.

5. It is simple, robust and portable.

Q.17 a. What are the various phases of consumer merchantile model and also differentiate between prepurchase interaction & post purchase interaction. **(7)**

Ans:
There are three phase of consumer mercantile model as listed below:
1. prepurchase interaction
2. purchase consummation
3. postpurchase interaction

Prepurchase Interaction
The prepurchase interaction for consumers consists of 3 activities:
Product/service search and discovery,
Comparison shopping and product selection, and Negotiation of terms.

Purchase Consummation

This model lists 3 activities in the purchase consummation phase:
Placement of order,
Authorization of payment, and
Receipt of product.

Postpurchase Interaction
Customer service and support: The considerations at this stage can be explained by the following example:
Consider a bundle consisting of a portfolio allocation model, a quadratic programming solution algorithm, and visualization tool to graphically depict percentage allocations into various instruments.
In executing this bundled service, the user notes that upon supplying the inputs, the
Expected output (i.e., a pie chart depiction of portfolio allocation) is not returned.

Who should the consumer turn to address this problem? Should the consumer approach the model provider, the solution algorithm provider or the visualization tool provider? Post purchase interaction is done to ensure that the rights of both consumers and providers are protected.

b. What are the limitations of traditional payment instruments? How are these limitations overcome by electronic payment systems.   **(7)**

Ans:
The limitations of traditional payment system are that they take a lot of time. These systems require manual work to be done & also requires cash to be paid.

The limitations of this is taken care of by e-payment system. E-payment offers total business-to-business and business-to-consumer E-Commerce Solutions and Services to small, medium and large enterprises and government organizations. Services include Web Design and Hosting, Domain Name Registration, Shopping Cart software and other innovative products for the online world.

Q.18 **a**. What is electronic cash? What are the properties of electronic cash?   **(7)**

Ans:
E-cash is a cash which is represented by two models. One is the on-line form of e-cash which allows for the completion of all types of internet transactions.
The other is off-line; essentially a digitially encoded card that could
 be used for many of the same transactions as cash.
Properties :
1. Monetary Value : Monetary value must be backed by either cash, bank – authorized credit cards or bank certified cashier's cheque.
2. Interoperability : E-cash must be interoperable i.e exchangeable for other e-cash, paper cash, goods or services etc.
3. Retrievability : E-cash must be storable and retrievable.
4. Security : E-cash should not be easy to copy or tamper.

b. What are the types of amart cards used in e-commerce? What are the essential components of an e-banking site?   **(7)**

Ans:
Generally there are 2 types of smart cards.
Memory smart cards, which can be viewed as minuscule removable
read/ write disks with optional security; and processor cards, which
can be viewed as miniature computers with an input and output port.

Java card is a smart card with the potential to set the overall smart card standard,
Java Card is comprised of standard classes and APIs that let Java applets
run directly on a standard ISO 7816 compliant card. Java Cards enable secure
and chip-independent execution of different applications.
E-banking systems rely on a number of common components or
processes. The following list includes many of the potential com-
ponents and processes seen in a typical institution:

- Website design and hosting,
- Firewall configuration and management,

- Intrusion detection system or IDS (network and host-based),
- Network administration,
- Security management,
- Internet banking server,
- E-commerce applications (e.g. bill payment, lending, brokerage),
- Internal network servers
- Core processing system
- Programming support, and
- Automated decision support systems.

These components work together to deliver e-banking services. Each component represents a control point to consider.

Q.19 a. What is EDI (Electronic Data Interchange)? Explain benefits and   drawbacks of EDI process. Also explain different EDI components and EDI services?

(7)

Ans:

EDI: Electronic Data Interchange (EDI) is used by organizations for transactions that occur on regular basis to a pre-determined format. Its one of the E Commerce technologies. EDI consists of direct computer-to-computer transmission of data among various firms.

It is used in number of trade sectors for inter-organization, regular, repeat transactions. These systems require EDI standards, EDI software, an EDI network & trading community.

Advantages of EDI

1. EDI replaces paper transactions with electronic transactions thus it saves times and speeds up transactions .

2. It provides a legal record of business communications

3. Value-added networks (VANs) were required in the past but EDI users are now able to transmit their data encrypted over the Internet at the far lower Internet connection rates via new EDIINT [2] standards for email (AS1), HTTP/HTTPS (AS2), and ftp (AS3).

4. Use of EDI reduces cost. These include the cost of stationery, postage etc.

5. Accurate invoicing can be done using EDI. EDI invoices can be automatically matched against the original order and cleared for payment without any queries which usually arise when paper invoices are matched with orders.

6. Quick response is achieved with EDI. For example if a customer is to be informed that a particular product is not available and if this is one using paper orders it takes lot of time but with EDI a customer can be informed straight away so that he may go for the other option. Therefore, quick response can easily be obtained form the customer using EDI.

Disadvantages

1. The X12 standard is so large and general

2. EDI communications negotiate a technical agreement to define exactly what subset of EDI they will use

3. EDI variants define some optional EDI components as mandatory and others as forbidden, specify additional inter-component restrictions, identify a subset of codes within used code sets that will be accepted and used, may add additional codes, and restrict the transaction sets that will be used.

4. The lack of semantic rigor in the meanings of various components of EDI messages

5. Without being semantically-enabled, EDI messages are unable to be interfaced with Semantic Web Services

6. EDI is too expensive: some companies are only doing business with others who use EDI. If a company wants to do business with three organizations, they have to implement an EDI program. This expense may be very costly for small companies

Different EDI components and services

Three main components including services in EDI System are as follows:

- Application Service: Provides the means of integrating existing or new applications into the EDI System.

- Translation Service: Converts data from internal format standards to an external format and translates data from an external format to an internal format standard.

- Communication Service: Passes documents onto a network via the agreed communication protocol.

b. Define the terms internet, intranet and extranet and explain the role each plays in e-business.   **(7)**

Ans:

Internet:

The Internet, an umbrella term covering countless network and services that comprise a super-network, is a global network of computer networks that was initiated in the 1960's by a team of scientists under a US government research contract. The Internet now provides access EC transactions to millions of consumers and businesses.

Intranet:

An Intranet is a type of information system that facilitates communication within the organizations among widely dispersed departments, divisions, and regional locations. Intranets connect people together with Internet technology, using Web Browsers, Web Servers, and Data Warehouses in a single view. With an intranet, access to all information, applications, and data can be made available through the same browser. The objective is to organize each individual's desktop with minimal cost, time and effort to be more productive, cost-efficient, timely and competitive.

Extranet:

Extranet is Extension of an Intranet that makes the latter accessible to outside companies or individuals with or without an intranet. It is also defined as a collaborative Internet connection with other companies and business partners. Parts of the Intranet are made available to the customers or business partners for specific applications. The Extranet is thus an extended Intranet, which isolates business communication from the Internet through secure solutions. Extranets provide the privacy and security of an Intranet while the global reach of the Internet.

Role of Internet, Intranet and extranet in e-business

The following information activities are carried out in any business:

1. Procurement of raw materials
2. Advertising the products
3. Selling the products and providing service after sale.
4. Issuing bills making invoices, receiving and making payments.
5. Transaction with dealers, distributors, customers, banks etc.

The above operations are being performed at different locations. The computer network through Internet has made it possible to communicate with each other and exchange. Information related to specific dealings.

Q.20   a. Discuss any two popular encryption techniques to ensute secured transactions on the net?

(7)

Ans:

1. Translation table: In this method each chunk of data is used as an offset within a 'translation table' and the resulting 'translated' value from within the table is then written into the output stream. The encryption and decryption programs would each use a table that translates to and from the encrypted data. This method is very simple and fast, the down side is that once the translation table is known, the code is broken.

2. Word/byte rotation and XOR bit masking.

In this method the words or the bytes within a data stream are rotated, using multiple and variable direction and duration of rotation. This is nearly impossible to break. Further, the use of 'XOR mask' in combination with this makes the code breaking process even more difficult.

b. What are the various connectivity options available to Internet Subscribers? Discuss in detail.   **(7)**

Ans:

Internet Connectivity Options:

Internet access is perhaps one of the most popular services that Service Providers offer their customers. Customers have flexibility to purchase MPLS VPN services Internet connectivity from separate Service Providers. Customers can alternatively offer Internet connectivity directly from their network may it be from one of their remote sites or the central site. The Internet Service Provider (ISP) does not need to distinguish customer's Internet and VPN traffic, because all traffic traversing through a Service Provider network would be MPLS VPN traffic. Customers who do not purchase Internet connectivity from a Service Provider do need to work out additional variables:

- Routing
- Appropriate location for Internet access within the network
- Network Implementation Translation (NAT) implementation, if the network does not use public addresses
- Security
- Additional management and monitoring

The best way to offload these responsibilities is to purchase services from a Service Provider.

ISPs, Service Providers, and customers often wonder about the best and most highly recommended way to set up Internet connectivity.

There are various possible combinations for using a network infrastructure to implement Internet connectivity, depending on how a Service Provider carries MPLS VPN and Internet traffic. The options at the infrastructure level are:

1. Shared MPLS VPN and Internet Connectivity

2. Partially Shared

3. Full Separation

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Q.21 a. Describe generic framework for electronic commerce with suitable diagram?
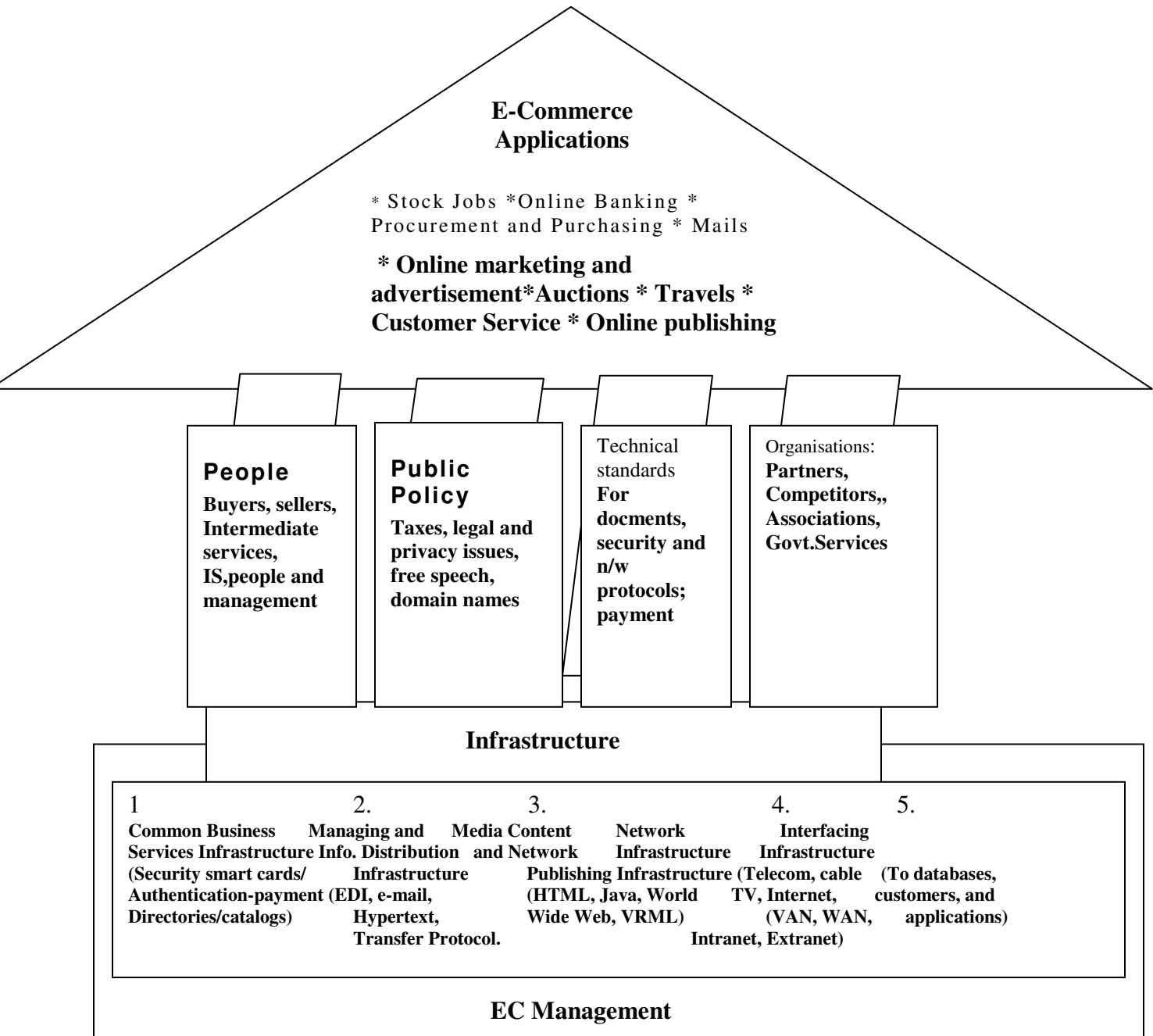
(7)

Ans:

Generic Framework for electronic commerce includes the Applications of EC (such as banking, shopping in online stores and malls, buying stocks, finding a job, conducting an auction, and collaborating electronically on research and development projects). To execute these applications, it is necessary to have Supporting Information and Organizational Infrastructure and System, which includes

- Common Business Services Infrastructure (security smart cards/authentication, electronic payment, directories/catalogs)
- Messaging and Information Distribution Infrastructure (EDI, e-mail, Hypertext Transfer Protocol)
- Multimedia Content and Network Publishing Infrastructure (HTML, Java, World Wide Web, VRML)
- Network Infrastructure (Telecom, cable TV, wireless, Internet, VAN, WAN, LAN, Intranet, Extranet) And their implementation is dependent on four major areas as supporting pillars:
- People (Buyers, Sellers, Intermediaries services, IS People, and Management),
- Public policy (Taxes, Legal, Privacy Issues, Free Speech, Domain Names)
- Technical Standards (for Documents, Security and Network Protocols, Payments)
- Organizations (Partners, competitors, Associations, Govt. Services)

The EC management coordinates the applications, Infrastructures, and pillars.

Diagram for Architectural framework for electronic commerce is given below:

**E-Commerce
Applications**

* Stock Jobs *Online Banking *
Procurement and Purchasing * Mails

 *** Online marketing and
advertisement*Auctions * Travels *
Customer Service * Online publishing**

| **People**
Buyers, sellers,
Intermediate
services,
IS,people and
management | **Public**
Policy

Taxes, legal and
privacy issues,
free speech,
domain names | Technical
standards
For
docments,
security and
n/w
protocols;
payment | Organisations:
Partners,
Competitors,,
Associations,
Govt.Services |

Infrastructure

| 1
Common Business
Services Infrastructure
(Security smart cards/
Authentication-payment
Directories/catalogs) | 2.
Managing and
Info. Distribution
Infrastructure
(EDI, e-mail,
Hypertext,
Transfer Protocol. | 3.
Media Content
and Network
Publishing
(HTML, Java, World
Wide Web, VRML) | 4.
Network
Infrastructure
Infrastructure
(Telecom, cable
TV, Internet,
(VAN, WAN,
Intranet, Extranet) | 5.
Interfacing
Infrastructure
(To databases,
customers, and
applications) |

EC Management

b. What do you understand by E-cash? What are the properties of E-cash? What is the basic difference between the transaction made using Smart Card and E-cash?

(7)

Ans:
E-Cash and its Properties:

Ecash is a cash which is represented by two models. One is the on-line form of e-cash which allows for the completion of all types of internet transactions.
The other is off-line; essentially a digitially encoded card that could be used for many of the same transactions as cash.

Properties :

1. Monetary Value : Monetary value must be backed by either cash, bank – authorized credit cards or bank certified cashier's cheque.
2. Interoperability : E-cash must be interoperable i.e exchangeable for other e-cash, paper cash, goods or services etc.
3. Retrievability : E-cash must be storable and retrievable.
4. Security : E-cash should not be easy to copy or tamper.

Smart Card & E-Cash

E-cash storable smart cards can store and dispense cash electronically, making bills and coins lesser necessary. It transfers funds over phone lines, making it easier to reload your smart cards. You can use this system wherever you see the outlets accepting e-cash. This is basically an electronic wallet that allows person-to-person payments. The telephone or Internet link lets you make this person-to-person payment anywhere in the world. The card can store around five separate currencies at the same time.

Q.22 a. Describe Mercantile Process Model from the Merchant's perspective with a suitable diagram. **(7)**

Ans:
This model lists 3 activities in the purchase consummation phase:
Placement   of   order,   Authorization   of   payment,   and   Receipt   of   product.

The interaction for these activities is done in three phases. They are listed below:

(i)   Prepurchase Interaction

The prepurchase interaction for consumers consists of 3 activities:
Product/service search and discovery
Comparison-shopping and product selection
Negotiation of terms.

(ii) Purchase Consummation

This model lists three activities in the purchase consummation phase:
Placement of order,
Authorization of payment and
Receipt of product.

(iii) Postpurchase Interaction

Customer service and support:

The considerations at this stage can be explained by the following example:
Consider a bundle consisting of a portfolio allocation model, a quadratic programming solution algorithm, and a visualization tool to graphically depict percentage allocations into various instruments.
In executing this bundled service, the user notes that upon supplying the inputs, the expected output (i.e., a pie chart depiction of portfolio allocation) is not returned.
Who should the consumer turn to address this problem? Should the consumer approach the model provider, the solution algorithm provider or the visualization tool provider?
To ensure that the rights of both consumers and providers are protected.

b. Explain different security protocols used for e-commerce applications.   **(7)**

Ans:

The e-commerce systems of today are composed of a number of components including: a commerce server, data transaction protocols, and client software from which transactions originate.

The protocols for e-commerce transactions are : SSL, PCT, SET, S-HTTP, S/MIME, Cybercash, and Digicash among others. Most of these protocols are not interoperable, and consumers must choose one protocol over another. If a merchant is not a subscriber to Cybercash, then a Cybercash consumer will not be able to purchase wares from the merchant. A consumer does not have a browser client that supports S-HTTP, then the consumer will not be able to engage in a secure transaction with a merchant that uses S-HTTP. The market may ultimately decide the winners and losers in standardized protocols, however, the necessity for interoperable, cross-platform components will not lessen. Development of secure components for use in building commerce applications is an important step in the maturation and acceptance process.

Q.23   Differentiate the following:-

i)   Traditional Commerce vs Electronics Commerce   **(4)**

Ans:

   Identity.   In traditional commerce customers can easily authenticate the identity of a merchant simply by walking into a bricks-and-mortar store while E-Commerce means

doing business online or selling & buying products and services through web storefronts.

Immediacy. Customers can touch and feel and hold the merchandise.

Value. The item at the center of the commerce transaction -- the product, service, or property that is to be sold/bought.

Discourse. Customers can converse with the merchant face-to-face; unmediated conversation is basic to human communication. People want the feedback available from non-verbal behavior, which forms a large part of our judgment process.

Community. Customers can interact with other customers and gain feedback about the merchant from other customers, as well as by observing the merchant interacting with other customers.

Privacy. In E-Commerce customers can make purchases anonymously with cash; they usually don't have to give their name or address. This is not possible in traditional commerce.

ii) Hypertext vs Hypermedia   **(5)**

Ans:
Hypertext is basically the same as regular text - it can be stored, read, searched, or edited - with an important exception: hypertext contains connections within the text to other documents.

Hypermedia documents contain links not only to other pieces of text, but also to other forms of media - sounds, images, and movies. Images themselves can be selected to link to sounds or documents. Here are some
World Wide Web is an open hypermedia system.

iii) E-cheques vs Credit Cards   **(5)**

Ans:
E-cheques: E-cheques are used for business dealing in e-commerce. Transactions of these cheques take place on Internet. In this system the electronic cheque is issued by the buyer to the seller. The e-cheques are then deposited by the seller in the bank account. A number of agencies like clearing house, certification authority, buyer's bank and seller's bank participate in the entire process along with the actual seller and the buyer.

Credit Card: This is a normally used transaction card. After purchases are made, the card enters the transactions against the credit card. The card issuer transfers the required amount of money to the seller's account. The bill for such an amount is raised to the cardholder.

Q.24   **a**. Discuss the functioning of various network access equipment.   **(7)**

Ans:

The E1 multiplexers MX2000 and MX2411 and E1/T1 MX200 are providing multi interface user access to network PDH or SDH network or a microwave link. They make it possible either to make a point-to-point connection by multiplexing several affluent, or to carry out connections multipoint if the networks cross connect the TS of the links.

The TDM multiplexer multi E1/T1/E3/DS3, QX3440, IX4200-9 and IX4200-28 are termination equipments of PDH network, or they could be used as a node of PDH networks by using the cross-connect of the affluent, broadcasting, protection features. This equipment allows the distribution to subscribers for voice or leased lines and also to manage the installation of very significant networks multipoint. Those will be often used with SDH multiplexers like IX4100, IX7163 that have also the functionalities of mixing PDH and the full ADM STM1 multiplexer HX9100.

b. What do you understand by work flow automation? How do work flow related technologies affect e-business?   **(7)**

Ans:
Work Flow Automation:

Organizations often standardize processes across the organization and encourage users to adopt them. Each business unit has a unique set of business processes.

The workflow is a very important part of the software development process.

The workflow automation provides a possibility to plan, manage, control and document the communication process.

There are some standards like WFMC' Reference Model etc.

Work Flow related Technologies affect e-business

Microsoft CRM automates internal business processes by creating workflow to carry out routine tasks that involve daily business operations.

These processes can be designed to ensure that the right information gets to the right people at the right time, and help participants keep track of the steps they have to take to complete their work. Your managers can define, automate, and enforce specific business rules, policies, and procedures.

Microsoft CRM Workflow tools enables one to:

- Define business policies based on established processes.
- Ensure that customer commitments are met.
- Automatically escalate issues to management when required.
- Level workloads across teams and territories.
- Manage key business policies and procedures.

Ensure a consistent service process.

Q.25 a. What is e-brokerage? How does electronic brokerage facilitate search and retrieval of information?   **(7)**

Ans:
E-brokerage is an investment house that allows you to buy and sell stocks and obtain investment information from its Web site.

E-commerce not only has tremendous potential for growth but also poses unique challenges for both incumbents and new entrants.

Three firm capabilities that are critical for superior firm performance in e-commerce are:-

1. Information technology capability,
2. Strategic flexibility, and
3. Trust-building capability.

E Brokerage facilitates search & retrieval of Information

The success factor of a brokerage is its ability to retain existing clients and to increase their satisfaction through effective coordination and enactment of CRM activities.

Customer relationship management (CRM) is the strategy for optimizing the lifetime value of customers.

It allows companies to gather and access information about customers' buying histories, preferences, complaints, and other data so that they can better anticipate what customers want.

b. What is Supply Chain Management? What are the characteristics of Supply Chain Management in an e-commerce environment?   **(7)**

Ans:

Supply Chain Management:

Supply Chain Management involves developing the performance of an organization's supply chain from its suppliers to its customers, by identifying and then selectively improving supply chain processes and organizational infrastructure.

The products sold in shops & purchased for use in organizations are the result of a complex web of relationships between manufacturers, component suppliers, wholesalers, retailers & the logistic infrastructure that links them together.
The web of the trade relationships is referred to as the supply chain or the value chain. Value chains differ between trade sectors

An overall value chain for a manufactured product is shown in a simple form:
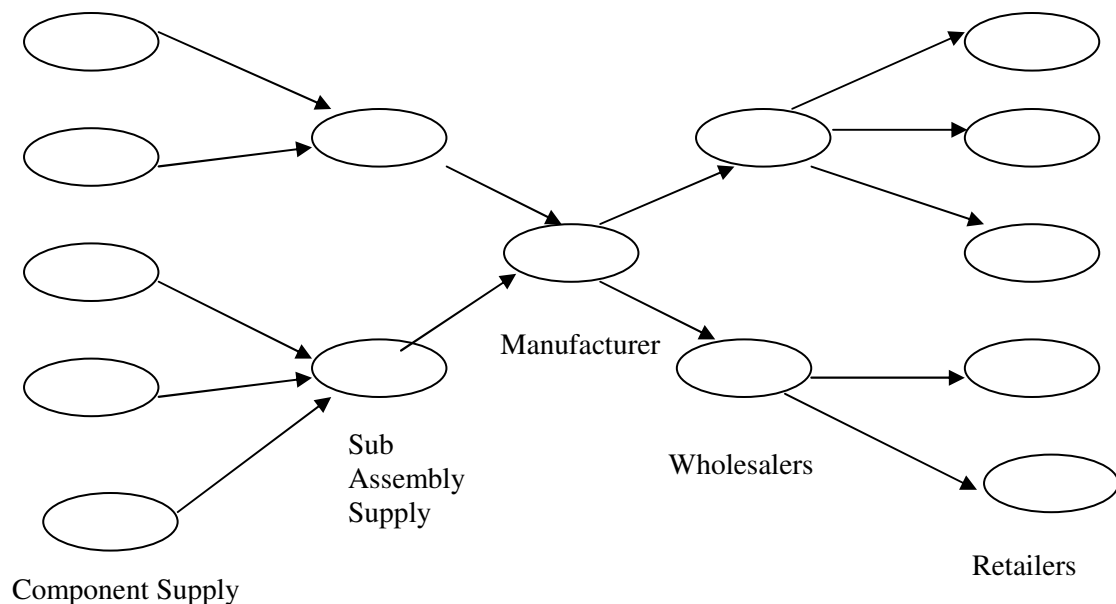
Features of Supply Chain Management

Supply Chain Management uses various methods to determine, influence and change how various factors effect buyer behaviour in the supply chain.

Supply Chain Management can help clients to develop brand policies which acknowledge consumer preferences, and supported by appropriate supply contracts maximize the profitability delivered to the business for the available "shelf space".

Supply Chain Management Consultancy's scope is extensive, and typically includes:

1. Sales order processing and customer service
2. Outbound distribution
3. Finished goods warehousing and inventory management
4. Production planning and control
5. Work-in-progress inventory management
6. Raw materials inventory management
7. Inbound distribution
8. Supplier scheduling (or procurement) and
9. Purchasing (or sourcing).

Q.26 a. What are the two primary models of Supply Chain Management? Discuss the primary elements of these models. **(7)**

Ans:
Two Primary models of Supply Chain Management

1. Porter's Value Chain Model
2. Supply Chain Model

Primary Elements of these Models are discussed below

They are essentially concerned with Internal Activities of Company. The 3 primary activities of a product process are:

1. Inbound Logistics
2. Operations
3. Outbound Logistics

Also Porter adds 2 further activities, which are
1. Marketing & Sales
2. Service

To support these primary functions there will be a company's infrastructure that performs a number of support activities. These activities are

1. Procurement: Responsible for negotiating quality supplies at an acceptable price with reliable delivery.

2. Technology Development: To ensure that organization's products remain competitive it needs to update its production process, train staff & to manage innovation.

3. Human Resource Management: The recruitment, training & personnel management.

4. Firm Infrastructure: Overall management including planning & accountancy.

b. What does the term convergence mean with respect to E-commerce? Explain three different types of Convergences.   **(7)**

Ans:
Convergence with respect to e-commerce

The ability to leverage and integrate the various data sources and processes that make up a corporation's lifeblood and deliver them to the consumer via an integrated web site has given rise to the new world of e-business.

The decreasing cost and increasing speed of wireless devices is driving the move to wireless communication.

Now there is a convergence underway, enabling wireless devices to act as clients in the exploding e-business world.

As more and more businesses seek to build their mission critical business solutions on IP networks, networking providers must examine corporate requirements for electronic commerce using the Internet, intranets, and extranets.

Businesses crave the ease of use of IP technology that promises their companies-to take advantage of the extra benefits, features, enhancements and cost savings that IP technology can provide them like

IP Access
Intranets on Virtual IP Networks
Extranets on Virtual IP Networks

Three different types of convergences are:

1. The convergence of e-commerce and wireless technology
2. The Convergence of E-Commerce and IP Business-Grade Messaging
3. The Convergence of telecommunications and data

Q.27 **a**. What are the server specific middle wares? What can be their role in e-commerce ? Describe the additional features required for an e-commerce server?

(7)

Ans:

Server specific middle wares. Their role in e-commerce. Additional features required by e-commerce server.

Middleware is the term often used to describe the application or business logic present in an application server. Unfortunately, the same term is also used to describe generic services. For example, to communicate, the three tiers may use a messaging system. This is true middleware in the sense that it functions between, or in the middle of the three tiers. When someone uses the term *middleware*, be sure you know what specific meaning is intended.

Commerce Server is media-independent, multi-platform server software that enables the deployment of shopping sites and channels on new media: internet, interactive TV, and mobile.

By the use of infoPlatfrom Commerce Server a shopping service can take advantage of reaching the end user on OpenTV, WAP, SMS and MMS.The product supports functionalities including media-adopted configurable shoping interfaces, personalized promotions, and affiliates integration, besides the mainstream functionalities of a typical e-commerce server such as product and catalogs, shopping carts, ordering and delivery tracking functionality.

The system integrates seamlessly with third-party systems for electronic payment, and delivery tracking with the industry standard protocols such as cXML and ebXML.The system has a full-scale management interface for the operations personal for the e-commerce company.

E-commerce services require dynamic configuration capabilities and seasonal and daily service configuration and content management requirements. The management interface of infoPlatform Commerce Server provides much functionality to easily adapt to the dynamic atmosphere of e-commerce business. The modular software architecture based on J2EE and Oracle enables easy adaptation and customization for specific business rules, and integration to any installed base or third-party system using open standards such as cXML, ebXML, SOAP, HTTP, JDBC, and ODBC.
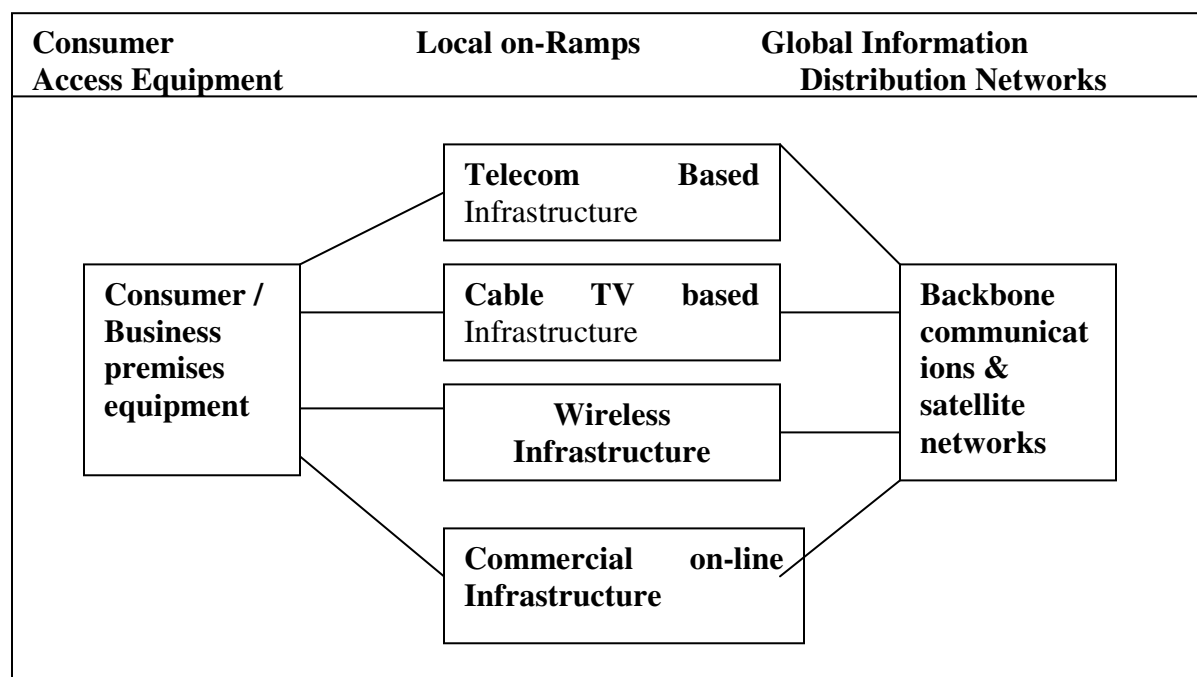
b. What are the components of I-way Infrastructure? Explain with the help of a diagram. Give the block diagram of the basic WWW architecture. Discuss the basic entities in brief.

(7)

Ans:

There are three components of the I-way infrastructure:
- Consumer access equipment
- Local on-Ramps
- Global information Distribution Network

Consumer Access Equipment	Local on-Ramps	Global Information Distribution Networks
Consumer / Business premises equipment	**Telecom** **Based** Infrastructure **Cable** **TV** **based** Infrastructure **Wireless Infrastructure** **Commercial** **on-line** **Infrastructure**	**Backbone communicat ions & satellite networks**

1. Consumer access equipment represents a critical category, the absence or slow progress of which is holding up other segments of the I-way.
2. Local on-ramps provide linkages between community, businesses, schools and homes to the communications network.
3. Global information distribution networks provide the infrastructure crisscrossing countries and continents.

World Wide Web: It is a complex client/server system in which a web client communicates with the web server. It refers to an interlinked connection of web documents, which can be used by any web server. The documents may be in the form of hypertext, menus, databases etc. Some documents are placed on the web server and the other are available through uniform resource locators. The web documents are marked for formatting and linking with hypertext mark up language (HTML). To deliver web pages, the web servers use Hypertext transfer protocol (HTTP).
The architecture of the WWW, figure below, is the one of clients, such as Netscape, Internet Explorer, or Lynx, "which know how to *present* data but not what its origin is, and servers, which know how to *extract* data", but are ignorant of how it will be presented to the user.

Architecture of the WWW
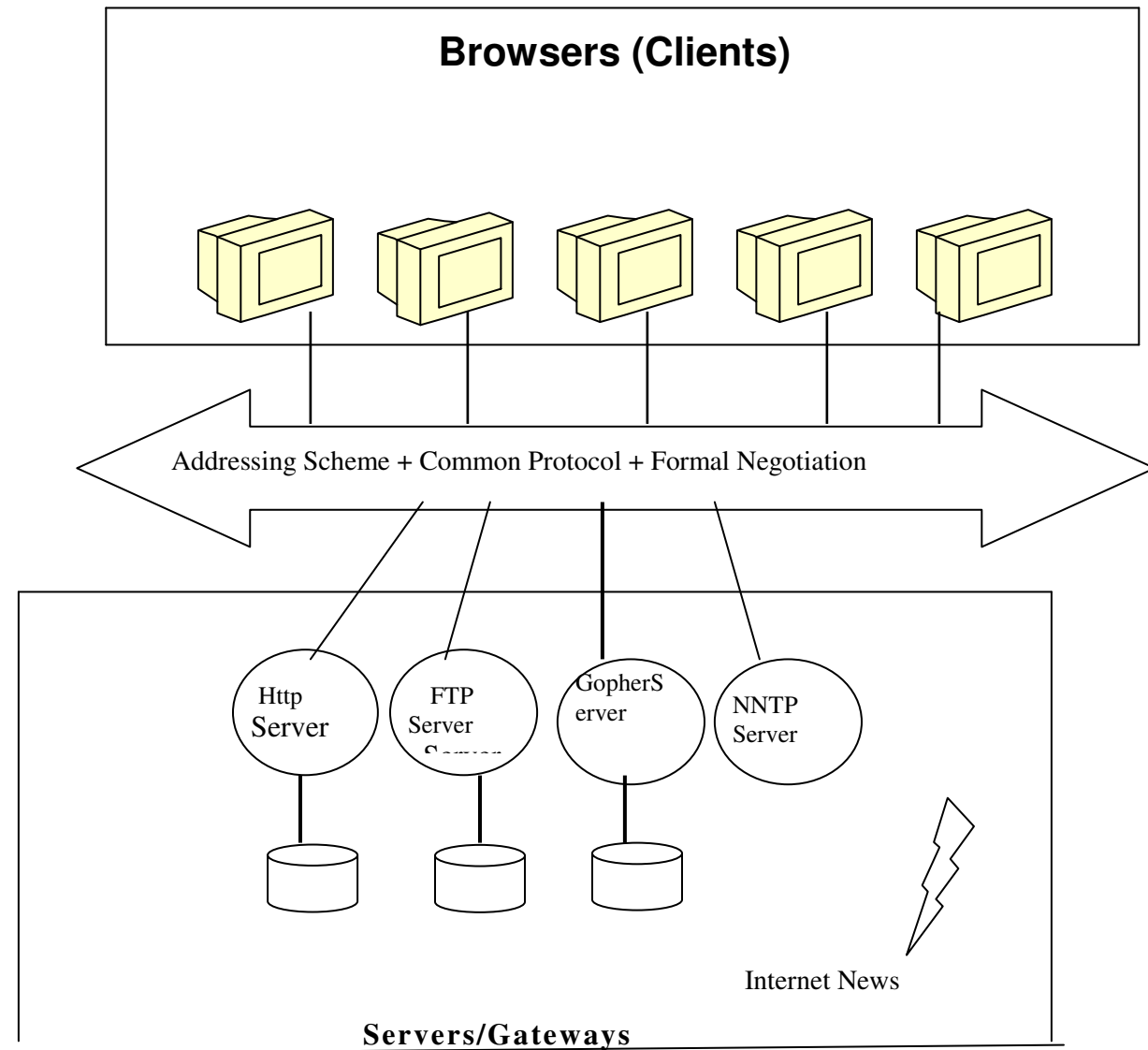
Q.28   a.   What is Public Key Cryptography? Explain its advantages and disadvantages.

(7)

Ans:
Public Key Cryptography:
A cryptographic system that uses two keys-- a *public key* known to everyone and a *private* or *secret key* known only to the recipient of the message.

An important element to the public key system is that the public and private keys are related in such a way that only the public key can be used to encrypt messages and only

the corresponding private key can be used to decrypt them. Moreover, it is virtually impossible to deduce the private key if you know the public key.

They are extremely secure and relatively simple to use.

Advantages & Disadvantages

Increased security and convenience: private keys never need to be transmitted or revealed to anyone.

They can provide a method for digital signatures

Public-key authentication prevents repudiation; each user has sole responsibility for protecting his or her private key. This property of public-key authentication is often called non-repudiation.

A disadvantage of using public-key cryptography for encryption is speed

For encryption, the best solution is to combine public- and secret-key systems.

The public-key system can be used to encrypt a secret key, which is used to encrypt the bulk of a file or message. Such a protocol is called a digital envelope

A successful attack on a certification authority will allow an adversary to impersonate whomever the adversary chooses to by using a public-key certificate from the compromised authority to bind a key of the adversary's choice to the name of another user.

Public-key cryptography is not meant to replace secret-key cryptography, but rather to supplement it, to make it more secure.

b. What are the steps involved in authentication? What is the role of third party and certifying authorities?   **(7)**
Ans:
Steps in Authentication

The control over the access of the resources in the repository is exercised in two steps namely Authentication and Authorization.

1. Authentication aims at checking if the user is allowed to connect to the   repository server.

2. Authorization aims at checking if the user is allowed to perform the operation he or she is trying to execute.

How basic authentication works

When a particular resource has been protected using basic authentication, Apache sends a 401 Authentication Required header with the response to the request, in order to notify the client that user credentials must be supplied in order for the resource to be returned as requested.

Upon receiving a 401-response header, the client's browser, if it supports basic authentication, will ask the user to supply a username and password to be sent to the server. If you are using a graphical browser, such as Netscape or Internet Explorer, what

you will see is a box, which pops up and gives you a place to type in your username and password, to be sent back to the server. If the username is in the approved list, and if the password supplied is correct, the resource will be returned to the client.

Because the HTTP protocol is stateless, each request will be treated in the same way, even though they are from the same client. That is, every resource, which is requested from the server, will have to supply authentication credentials over again in order to receive the resource.

Fortunately, the browser takes care of the details here, so that you only have to type in your username and password one time per browser session - that is, you might have to type it in again the next time you open up your browser and visit the same web site.

Role of Certifying Authority

A certificate authority is a body, either private or public, that seeks to fill the need for trusted third-party services in E-commerce. A certificate authority accomplishes this by issuing digital certificates that attest to certain facts about the subject of the certificate. VeriSign is one of the pioneering CA's.

IN the context of credit cards the cardholder certificate authority (CCA) issues the certificate to cardholders, the merchant certificate authority (MCA) to merchants who operates e-stores, & the payment gateway certificate authority (PCA) to payment gateway service providers.

Q.29 a. What do you understand by WWW? What is the use of hypertext links in Internet access? Name some popular Internet Browsers. **(7)**

Ans:
WWW: The World Wide is an architectural framework for accessing linked documents spread out over thousands of machines all over the world. It is basically a client server system.

Technically it refers to the Hypertext servers that allow text, graphics & sound files to be mixed together.
Loosely it refers to all type of resources that can be accessed.

Use of Hypertext links in Internet access

From the user's point of view, the Web consists of a vast, worldwide collection of documents i.e pages. Each page may contain links (pointers) to other related pages, anywhere in the world. Users can follow a link, which then takes them to the page

pointed to. This process can be repeated indefinitely. Pages that point to other pages use Hypertext.

Hypertext is any text that cross-references other textual information with hyperlinks. As all the text in the web is linked through hyperlinks it is of utmost usage for Internet access.

Popular Internet Browsers are:
Internet Explorer, Netscape Navigator and Mosaic

b.   How do you achieve workflow automation in e-business environment?   **(7)**

Ans:

In order to run smoothly, organizations often standardize processes across the organization and encourage users to adopt them. Unfortunately, each business unit has a unique set of business processes.

There are no any really good stand-alone workflow systems (there are some good work flow systems are part of large ERP System). There are some standards like WFMC' Reference Model etc.

One can use Microsoft CRM to automate internal business processes by creating workflow to carry out routine tasks that involve daily business operations.

Microsoft CRM Workflow tools enable one to:

- Define business policies based on established processes.
- Ensure that customer commitments are met.
- Automatically escalate issues to management when required.
- Level workloads across teams and territories.
- Manage key business policies and procedures.
- Ensure a consistent service process.

Q.30   a.   What do you understand by Electronic Funds Transfer?   **(6)**

Ans:

Electronic Funds Transfer:

It's an electronic payment method that transfers the money value from one bank account to another in same or different bank.

Today we can also use Internet Based Electronic Funds Transfer (EFT), which implies that the connection between the cyber banks & security protection during the transmission is a must.
EFT has been in use since the 1970's through automated clearinghouses (ACHs)

b.   What is the function of an IP packet screening Router? Explain with the help of a diagram. **(4)**

Ans:

Function of an IP Packet Screening Router:
A screening router is the most basic type of firewall and uses only the packet filtering capability to control and monitor network traffic that passes though the border. Screening routers on a server with packet filtering can block traffic between networks or, for example, traffic to or from specific hosts on an IP port level.Direct communication is usually permitted between multiple hosts on the private network and the Internet. The diagram below shows a basic example of how a screening router works.

Screening Router

INTERNET

TCP/IP   TCP/IP

IPX   IP Client
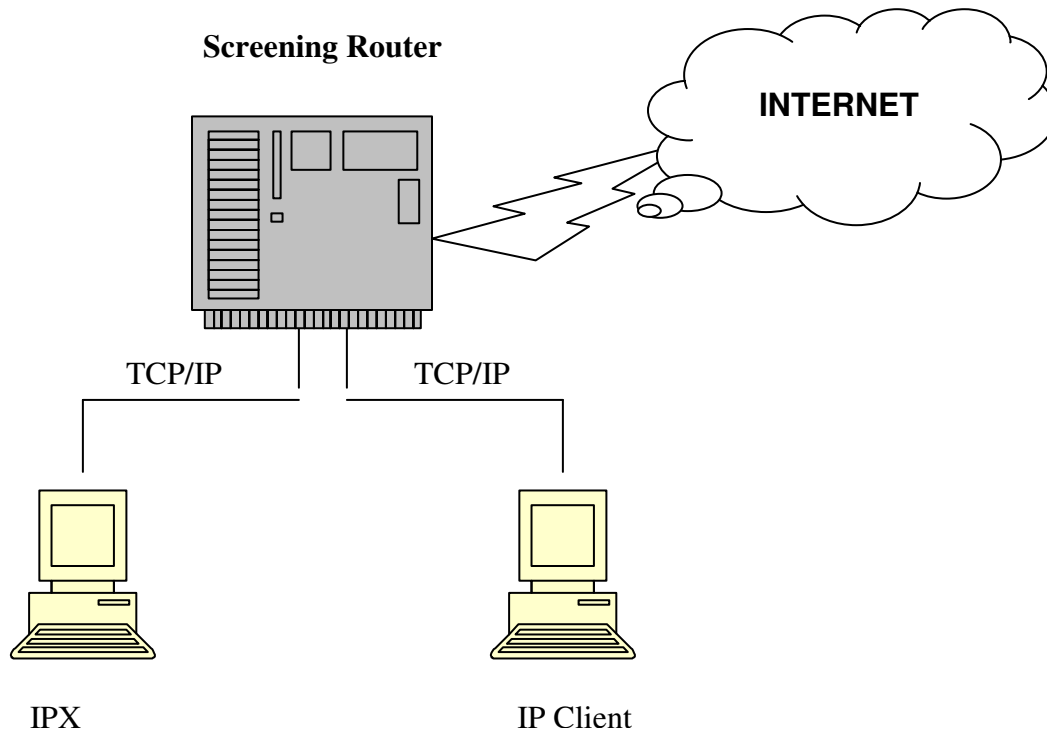
Firewall Using Screening Router:

The risk of break-in is large with this type of firewall: each host on the private network is exposed to the Internet and is still a potential break-in point. Unauthorized users can detect and use internal addresses to access information within the firewall. To avoid break-in, screening routers can be set to look at the source address of each incoming IP header instead of the destination address, and drop private addresses that come from the Internet.

c. What are the desirable characteristics of an Electronic Market Place? **(4)**

Ans:

Characteristics of an Electronic Market Place:

a. Its electronic, the business center is not a physical building rather a network-based location where business interactions occur.

b. They are built around publicly accessible networks

c. In this two types of relationships can exist:

- Customer/seller linkage is established at the time of transactions & may be for one transaction only.
- Customer/seller purchase agreement is established whereby seller agrees to deliver services to customers for a defined period of time.

d. When outside communications companies are involved they are typically inline service   providers.

e. Customers & sellers independently determine which communication networks they will use in participating in electronic market.

f. No joint guidelines of each party are formulated in advance.

Q.31 **a.** Discuss password schemes and Biometric systems for implementing client server network security. **(8)**

Ans:

In cyberspace, buyers & sellers cannot see each other. Also in video conferencing, the authenticity of the person dealing with must be verified unless one has dealt with that person before.
Biometric controls provide access procedures that match every valid user identifier (UID).
They also provide authentication method to verify that users requesting access are really the ones who claim to be.
A UID is accomplished in one or more of following ways:

- Provide some password, which only user knows.
- Present something like a smart card or a token which only the user has
- Identify something only the user is, like signature, voice, fingerprint or retinal (eye) scan. It is implemented by biometric controls.

The most common biometrics is the following.

Face geometry (Photo): The computer takes the picture of your face & matches it with a prestored picture.

Fingerprints (Fingerscan): Whenever a user wants access, matching fingerprint against a template containing authorized person's fingerprints.

Hand Geometry: Like fingerprints except the verifier uses a TV like camera to take the picture of the user's hand.

Blood vessel pattern in the retina of a person's eye: A match is done between the pattern of the blood vessels in retina that is being scanned & prestored picture of retina.

Voice (Voice Print): A match between users voice & voice pattern stored on templates.

Signature: matched against the prestored authentication signature.

Keystike Dynamics: Match of person's keyboard pressure & speed against prestored information.

Others: Like Thermography, using a PIN & iris scan.

b.   Discuss various threats posed by servers in a client server environment.   **(6)**

Ans:

Server Destroyed in an Accident: Leaking pipes, power failures and equipment failures are not uncommon
Destruction of Data Alteration of Data Disclosure of Data Fraud Denial of Service

Users Logged in on Unattended Desktop Computer.

The client/server architecture eliminates the incentive to sign off of mainframe applications to save on connect time charges.

Improperly Protected Server Accounts Used to Gain Access

Poorly protected user accounts, though less powerful, also make tempting targets, since they provide a toehold to gain further privileges

An intruder on a server can disclose sensitive information.

Address Spoofing: Someone spoofs network addresses to gain access to servers, and uses that access to read/alter data or set up future access.

Someone "spoofs" a network address by using their host computer to "impersonate" a trusted computer, thereby improperly gaining special permissions and access that only the trusted computer should have.

Sensitive Data Disclosed Through Packet Sniffing.

Alter data or programs, and leave behind hidden programs which steal passwords from unsuspecting users of the system, and which make future intrusions easier.

Q.32 a. Explain the Architectural framework for electronic commerce.   **(7)**

Ans:

An application independent framework to classify service interaction relies on four basic dimensions

1. Service topologies
2. Cooperation models,
3. Implementation techniques,
4. Quality of service.

Those most existing implementations rely on a tier-based client-server architecture disregarding the actual demands of the underlying application.

Service Topologies In a service-based architecture there arise dependencies among services resulting from cooperation

Implementation techniques (e.g. remote invocation, HTTP). An event-based cooperation can be implemented using message passing or it can be based on re- mote invocation mechanisms.

A cooperation model describes the way interdependencies are established by cooperative interactions. We identify two basic roles services can play: consumers and providers.

Quality of Service: This is assessed on the basis of customer's satisfaction.

b. What are the risks involved in Electronic Payment Systems?   **(7)**

Ans:

From the customer's perspective:

- Stolen payment credentials and passwords
- Dishonest merchants or financial service providers
- Disputes over quality of services or goods

From merchant's perspective:

- Forged or copied payment instruments
- Insufficient funds in customers account, especially with off-line payment systems
- Dishonest or slow financial service providers

From the financial service provider's perspective:

- Stolen customer or service credentials
- Forged or copied payment instruments
- Customers not paying (applies only to credit models)

The risk may be shifted in one direction or the other by using a credit or debit model and by special agreements.

Q.33 a.   What are the advantages and disadvantages of a Smart Card?   **(6)**

Ans:

Advantages of Smart Card:

1. It provides convenience & support for multiple currencies over borders.
2. Used to store information such as personal identification numbers.
3. Its applications include telephone, transportation & library copies.

Disadvantages of Smart Cards:

1. The value of money can be depleted & recharged.

2. Customers must keep separate e-cash cards, one for each application & can recharge card only at   designated locations.

3. In future recharges will be done through one's PC whether it is on internet or your bank network.

b.   What are the four types of consumer oriented applications of E-commerce? Discuss them briefly.   **(8)**

Ans:

Four types of Consumer Oriented applications in E-Commerce are as follows:

1. B2C (business-to-customer)

    "Electronic commerce" is generally understood mostly as selling goods or services to people ("final consumers"). This is not, so far, the biggest part of online business.

2. B2B (business-to-business)

    The consensus is universal: this is the priority;.

    this is where the money is. It's quite true; so far the bulk of online business is in company-to-company transactions.

3. C2C (customer-to-customer)

    Person-to-person transactions are the oldest form of e-business. They've been there from the beginning, long before there was any widespread use of the Internet. They continue to be all over the place, quite invisible to anyone thinking that all business is on a website.

4. C2B (customer-to-business)

    The most important activity in e-commerce isn't selling. It's buying. Quite often that doesn't mean buying online but checking, comparing, analyzing quality and price before baying in traditional stores or services.

Q.34 a.   Compare hypertext versus hypermedia.   **(5)**

Ans:

Hypertext is basically the same as regular text - it can be stored, read, searched, or edited - with an important exception: hypertext contains connections within the text to other documents.

Hypermedia documents contain links not only to other pieces of text, but also to other forms of media - sounds, images, and movies. Images themselves can be selected to link to sounds or documents. World Wide Web is an open hypermedia system.

b.   Explain the components of Information Super Highway Infrastructure.   **(5)**

Ans:

The Information Superhighway is more than the Internet. It is a series of components, including the collection of public and private high-speed, interactive, narrow, and broadband networks that exist today and will emerge tomorrow.

- It is the satellite, terrestrial, and wireless technologies that deliver content to homes, businesses, and other public and private institutions.
- It is the information and content that flow over the infrastructure, whether in the form of databases, the written word, a film, a piece of music, a sound recording, a picture, or computer software.
- It is the computers, televisions, telephones, radios, and other products that people will employ to access the infrastructure.
- It is the people who will provide, manage, and generate new information, and those who will help others to do the same.
- And it is the individual Americans who will use and benefit from the Information Superhighway.

The Information Superhighway is a term that encompasses all these components and captures the vision of a nationwide, invisible, seamless, dynamic web of transmission mechanisms, information, appliances, content, and people.

c. Give some examples of malicious data.   **(4)**

Ans:

In May 2002, the Norton Anti-Virus software for Windows operating systems detected about 61000 malicious programs. Some of them are named below:

1. The Morris worm released in 1988,
2. The MBDF virus,
3. The Pathogen virus,
4. The Melissa virus, and
5. The Anna worm.
6. ILOVEYOU

Q.35 a. What are the advantages of using XML over HTML?   **(7)**

Ans:

The root cause of the problem lies in HTML (Hyper Text Markup Language), the defacto standard for web publication. The major problem with HTML is its 'fixed tagset'. This tagset is mainly for display of the content and HTML provides no tag to address the content precisely.
XML (extensible Markup Language) designed by W3C (World Wide Web Consortium) promises a possible solution to this problem.

The major advantage of XML over HTML is its extensibility i.e., provision of user defined tags and attributes to identify the structural elements of a document. XML also

provides structural complexity to define document structure that can be nested at any level of complexity.

XML also facilitates the transfer of structured data between servers. XML describes data, such as city name, temperature and barometric pressure, while HTML defines tags that describe how the data should be displayed, such as with a bulleted list or a table.

b. What are the essential components of a 3-tier client server/   **(7)**

Ans:

In a three-tier or multi-tier environment, the client implements the presentation logic (the client). The business logic is implemented on an application server(s) and the data resides on database server(s).

The following three component layers thus define a 3-tier architecture:

1. A front-end component, which is responsible for providing portable
2. presentation logic;
3. A back-end component, which provides access to dedicated services, such as a database server.
4. A middle-tier component, which allows users to share and control business logic by isolating it from the actual application;

Q.36 a. What is the difference between intranet and extranet?   **(7)**

Ans:

Intranet:

An Intranet is a type of information system that facilitates communication within the organizations among widely dispersed departments, divisions, and regional locations. Intranets connect people together with Internet technology, using Web Browsers, Web Servers, and Data Warehouses in a single view. With an intranet, access to all information, applications, and data can be made available through the same browser. The objective is to organize each individual's desktop with minimal cost, time and effort to be more productive, cost-efficient, timely and competitive.

Extranet:

Extranet is Extension of an Intranet that makes the latter accessible to outside companies or individuals with or without an intranet. It is also defined as a collaborative Internet connection with other companies and business partners. Parts of

the Intranet made available to the customers or business partners for specific applications. The Extranet is thus an extended Intranet, which isolates business communication from the Internet through secure solutions. Extranets provide the privacy and security of an Intranet while the global reach of the Internet.

Following table gives brief overview of the differences among the three types of the network:

Network type	Typical users	Access	Type Of information
Intranet	Authorized employees only	Private and restricted	Specific, corporate, proprietary
Extranet	Authorized groups from collaborating companies	Private and authorized outside partners	Shared in authorized collaborating groups

b.   What are the different layers of TCP/IP protocol stack? Discuss their function briefly.
(7)

Ans:

Layers in the TCP/IP protocol architecture

o   Application Layer
o   Host-to-Host Transport Layer,
o   Network Access Layer,
o   Internetwork Layer

Internetwork Layer

The best-known TCP/IP protocol at the internetwork layer is the *Internet Protocol (*IP*),* which provides the basic packet delivery service for all TCP/IP networks. In addition to the physical node addresses used at the network access layer, the IP protocol implements a system of logical host addresses called IP addresses.

Network Access Layer

The network access layer is the lowest layer in the Internet reference model. This layer contains the protocols that the computer uses to

Host-to-Host Transport Layer

The protocol layer just above the inter network layer is the host-to-host transport layer. It is responsible for providing end-to-end data integrity and provides a highly reliable communication service for entities that want to carry out an extended two-way conversation.

Application Layer

The top layer in the Internet reference model is the *application layer*. This layer provides functions for users or their programs, and it is highly specific to the application being performed. It provides the services that user applications use to communicate over the network, and it is the layer in which user-access network processes reside.

Q.37 a. Write short notes on following topics.   **(7x2)**

    i)   Biometric Systems.

Ans:

Biometrics is the science of measuring physical properties of living beings.

Biometric Authentication

(1) Biometric authentication is the automatically recognition of a living being using suitable body characteristics.

(2) By measuring an individual's physical features in an authentication inquiry and comparing this data with stored biometric reference data, the identity of a specific user is determined.

Authentication means identification and verification

The most common biometrics is the following.
Face geometry (Photo): The computer takes the picture of your face & matches it with a presorted picture.
Fingerprints (Fingerscan): Whenever a user wants access, matching fingerprint against a template containing authorized person's fingerprints.
Hand Geometry: Like fingerprints except the verifier uses a TV like camera to take the picture of the user's hand.
Blood vessel pattern in the retina of a person's eye: A match is done between the pattern of the blood vessels in retina that is being scanned and prestored picture of retina.
Voice (Voice Print): A match between users voice and voice pattern stored on templates.
Signature: matched against the prestored authentication signature.
Keystroke Dynamics: Match of person's keyboard pressure and speed against prestored information.
Others: Like thermography, using a PIN & iris scan.

    ii)   SMTP and FTP.

Ans:
SMTP

Simple Mail Transfer Protocol, a protocol for sending e-mail messages between servers. Most e-mail systems that send mail over the Internet use SMTP to send messages from one server to another; the messages can then be retrieved with an e-mail client using either POP or IMAP.

SMTP is a relatively simple, text-based protocol, where one or more recipients of a message are specified (and in most cases verified to exist) and then the message text is transferred.

SMTP commands are generated by the sender-SMTP and sent to the receiver-SMTP. SMTP replies are sent from the receiver-SMTP to the sender-SMTP in response to the commands. In case a direct connection does not exist between the sender and the final destination, the message may be sent via one or more relay SMTP-servers. The relay SMTP-servers first acts as receivers and then relays the message to the next SMTP. To be able to provide the relay capability the SMTP-server must be supplied with the name of the ultimate destination host as well as the destination mailbox name.

FTP

FTP (File Transfer Protocol) is the protocol used on the Internet for sending files and is generally used for uploading / downloading files (web pages) to and from servers.

To begin an FTP session, you run the FTP client software and request the FTP server that you want to download files from. You can get FTP client software from the Internet.

Two popular examples of FTP clients are: Cute FTP and Leech FTP.

The FTP daemon runs on the FTP server. This daemon handles all FTP transactions. When a FTP client contacts a server, the daemon will ask for an account number (or username) and password. Many FTP sites let anyone log onto them to download files and software. This is called Anonymous FTP.

With anonymous FTP, you often use anonymous for your account number and your e-mail address for your password.

iii) E-brokerage.

Ans:
An e-brokerage is an investment house that allows you to buy and sell stocks and obtain investment information from its Web site.

For Banks the rewards of mastering e-brokerage can be substantial. Such capabilities can pay off in stronger customer relationships, particularly among the more affluent segments.

Many bankers and experts believe that as the various sectors of financial services gradually converge, customers will gravitate to providers who can blend banking and brokerage into one compelling value proposition

iv)   Digital Signatures.

Ans:

A digital signature is an electronic rather than a written signature that can be used by someone to authenticate the identity of the sender of a message or of the signer of a document.

It can also be used to ensure that the original content of the message or document that has been conveyed is unchanged.

Additional benefits to the use of a digital signature are that it is easily transportable, cannot be easily repudiated, cannot be imitated by someone else, and can be automatically time-stamped.

A digital signature can be used with any kind of message, whether it is encrypted or not, simply so that the receiver can be sure of the sender's identity and that the message arrived intact.

A digital certificate contains the digital signature of the certificate-issuing authority so that anyone can verify that the certificate is real.