

## CHAPTER-1: E-COMMERCE

**Question 1: What is E-Commerce? Write its features and impacts.**

**Ans:**

E-commerce is the buying and selling of goods and services, or the transmitting of funds or data over an electronic network. Basically, Electronic commerce or ecommerce is a term for any type of business, or commercial transaction that involves the transfer of information across the Internet. It covers a range of different types of businesses, from consumer based retail sites. Ecommerce allows consumers to electronically exchange goods and services with no barriers of time or distance.

**E –commerce exchange of business information using following ways (Scope of E-commerce):**

- Electronic Data Exchange (EDI)
- Electronic Mail (e-mail)
- Electronic Bulletin Boards
- Electronic Fund Transfer (EFT)
- Other Network-based technologies

**E-Commerce provides following features:-**

- Non-Cash Payment
- 24x7 Service availability
- Advertising / Marketing
- Improved Sales

- Support
- Inventory Management
- Communication improvement

### Impacts of E-commerce

- Direct Marketing
- Banking
- On-line education
- Human Resource management
- Trading
- Business Law
- Production

### Question 2: Explain E-Commerce trade-cycle.

**Ans:**

A trade cycle is the series of exchanges, between a customer and supplier that take place when a commercial exchange is executed. A general trade cycle consists of:

- Pre-Sale:
  - Search - finding a supplier
  - Negotiate – agreeing the terms of trade
- Execution:
  - Order
  - Delivery
- Settlement:

- Invoice
- Payment
- After-sales
- warrantee and service

### Question 3: Write advantages and Disadvantages of Ecommerce?

**Ans:**

#### Advantages to Organizations

- Using E-Commerce, organization can expand their market globally.
- E-Commerce helps organization to reduce the cost to create process, distribute, retrieve and manage the paper based information by digitisation.
- E-commerce improves the brand image of the company.
- E-commerce helps organization to provide better customer services.
- E-Commerce helps to improve process faster and efficient.

#### Advantages to Customers

- 24x7 availability.
- E-Commerce application provides user more options and quicker delivery of products.
- E-Commerce application provides easy price comparison.
- A customer can put review comments about a product

- E-Commerce provides option of virtual auctions.
- E-Commerce increases competition among the organizations.
- Customer can get offers and discounts.

#### Disadvantages:-

##### Technical disadvantages

- There can be lack of system security, reliability or standards owing to poor implementation of e-Commerce.
- Software developments are changed rapidly.
- Network bandwidth insufficient.
- Special types of web server or other software might be required by the vendor setting the e-commerce environment apart from network servers.
- Sometimes, it becomes difficult to integrate E-Commerce software or website with the existing application or databases.
- Problem of software/hardware compatibility issue.

##### Non-Technical Disadvantages:

- **Initial cost** of creating / building E-Commerce application in-house may be very high.
- User may not trust the site being unknown faceless seller.

- Difficult to ensure security or privacy on online transactions.
- Lack of touch or feel of products during online shopping.
- E-Commerce applications are still evolving and changing rapidly.
- Internet access is still not cheaper in remote villages.

#### Question 4: What is E-visibility?

**Ans:**

It describes visibility of E-commerce site on network. There are various strategies to increase the visibility:-

- **Increase the traffic:** - It is essential our e-commerce site is constantly on social networks as it is paramount to create and MAINTAIN our brand positioning in order to survive the online world.
- **Easy URL:** URL should be simple and short so that anyone can easily remember it.
- **Add icon on social media:**- This way followers will be enticed to share our posts increasing the chances it will be seen by other people and get more “Likes”.
- **Advertising:** this is a best way to advertise the website and product with other sites and offline that increase popularity of site.

- **Add with Search engine:** Now a day, Search engine play important role in online searching. We can link our site with popular search engine so that people can easily locate our site.
- **Link distribution:** Links of site can be distributed through email, sms and other applications.

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## CHAPTER 2: PAYMENT SYSTEM

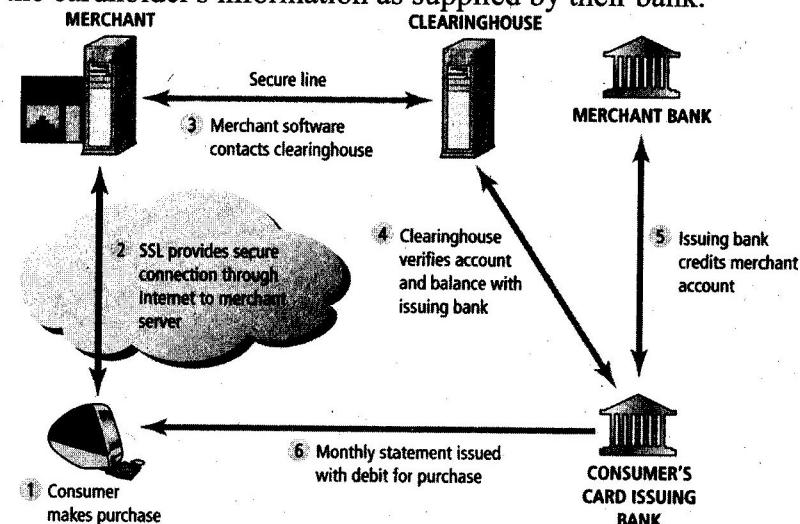
## Question 1: Explain different types of payment system in India.

**Ans:**

### Credit card

Payment using credit card is one of most common mode of electronic payment. When a customer purchases a product via credit card, credit card issuer bank pays on behalf of the customer and customer has a certain time period after which he/she can pay the credit card bill.

To use this system, shoppers simply enter their credit card number and date of expiry in the appropriate area on a web page. Increased security measures, such as the use of a card verification number (CVN), located on the back of the credit card, have been added to on-line credit card payment systems. The CVN system detects fraud by comparing the CVN with the cardholder's information as supplied by their bank.



### Debit card:-

A debit card is basically a card used for fund transactions. We can deposit and withdraw as per your convenience this way without the hassle of standing in long queues. It can be utilized for mobile banking and internet banking.

### Types of Debit Cards in India

- **Visa Debit Cards:-** These debit cards are issued with the bank's tie-up with VISA payment services providing the Verified by Visa platform for online transactions.
- **Master Card Debit Cards:-** A MasterCard Cirrus Card or a MasterCard Maestro Card gives customers access to their funds worldwide and they can perform online transactions.
- **RuPay Debit Cards:-** Introduced as a domestic card scheme by the NPCI, RuPay debit cards facilitate online purchases and transactions on the Discover network and ATM transactions under the National Financial Switch network.

### Smart card:-

A smart card is a plastic card about the size of a credit card, with an embedded microchip that can be loaded with data, used for telephone calling, electronic cash payments, and other applications, and then periodically refreshed for additional use.

Smart card can be accessed only using a PIN of customer. Smart cards are secure as they stores information in encrypted format and are less expensive / provide faster processing. Mondex and Visa Cash cards are examples of smart cards.

#### **Electronic fund transfer (EFT):-**

**Electronic funds transfer (EFT)** is the **electronic transfer of money** from one bank account to another, either within a single financial institution or across multiple institutions, through computer-based systems and without the direct intervention of bank staff. Now a day, internet based EFT is getting popularity. In this case, customer uses website provided by the bank. Customer logins to the bank's website and registers another bank account. He/she then places a request to transfer certain amount to that account.

#### **Paypal:-**

PayPal is an online payment service that allows individuals and businesses to transfer funds electronically. If you have a PayPal account, you can add and withdraw funds in many different ways. You can associate your account with bank accounts or credit cards for more direct transactions, including adding and withdrawing money.

#### **E-Money:-**

E-Money transactions refer to situation where payment is done over the network and amount gets transferred from one

financial body to another financial body without any involvement of a middleman. E-money transactions are faster, convenient and save a lot of time.

Online payments done via credit card, debit card or smart card are examples of e-money transactions. Another popular example is e-cash. In case of e-cash, both customer and merchant both have to sign up with the bank or company issuing e-cash.

#### **Question 2: Explain basic security for E-commerce.**

**Ans:**

**Following are the essential requirements:-**

- **Confidential:** Information should not be accessible by unauthorized person. It should not be intercepted during transmission.
- **Integrity:** prevent data modification by unauthorized person. Information should not be altered during its transmission over the network.
- **Availability:** Information should be available wherever and whenever requirement within time limit specified.
- **Authenticity:** User must be authenticating before giving him/her access to required information.
- **Non-Repudiability:** It is protection against denial of order or denial of payment. Once a sender sends a message, the

- sender should not able to deny sending the message.
- Similarly the recipient of message should not be able to deny receipt.
- Encryption:** Information should be encrypted and decrypted only by authorized user.

### Question 3: write advantage and *disadvange* of credit card.

**Ans:**

#### Credit card

Payment using credit card is one of most common mode of electronic payment. When a customer purchases a product via credit card, credit card issuer bank pays on behalf of the customer and customer has a certain time period after which he/she can pay the credit card bill.

#### Advantage:-

- Fast Payment
- Easy to use
- Secure
- Authenticate online
- Purchase protection
- Motivate to more purchase

#### Dis-advantage

- Costly sometimes
- Peer to peer transaction is not possible

- Fraud is major security issue

### Question 4: What is Shopping Procedure? Write advantage and dis-advantage of E-shopping.

**Ans:**

- Choose Your Product:** - Firstly, choose product at the online store
- Review Cart:** The first stage of the shopping cart process is to review your cart. Use the "Quantity" column to remove or change the quantity of a product. Click "Return to Shopping" to continue shopping or click "Continue to Shipping Information" to proceed to the next stage in the checkout process.
- Shipping Information:-** Fill in your shipping information. This is where you want your product shipped to (applicable for physical product).
- Shipping Method:** - Select the shipping method you would like. Then click "Continue to Billing Information".
- Billing Information:** - you must use the correct billing address. To ensure that your order is properly processed, please enter a valid email address and phone number. If your billing information is the **same** as your shipping information then leave the box checked and click "Continue to Payment Method". If your billing information

is different from your shipping information then uncheck the box and fill in the billing information. Then click "Continue to Payment Method".

- **Payment Method:** - If using a credit/debit card for payment then enter your credit card number, Expiration Date and CVV Code. Next click "Submit Payment". If using PayPal for payment then click on the **PayPal** tab and then click "Continue to PayPal".
- **Finalize Your Order:** This is a very important step. Your payment has been processed but you now must click the "Finalize Your Order" button to complete the shopping cart process.

#### **Advantages:**

- Time saving
- Easy comparison of prices
- 24 X 7 Availability
- No waiting in lines
- Save fuel and energy

#### **Dis-Advantage:**

- Sometime displayed items are differ in actual.
- **No Instant Satisfaction**
- **Sometime customer received damaged or changed items**

#### **Question 5: Explain steps of credit card payment.**

**Ans:**

**Credit card payment processes are:-**

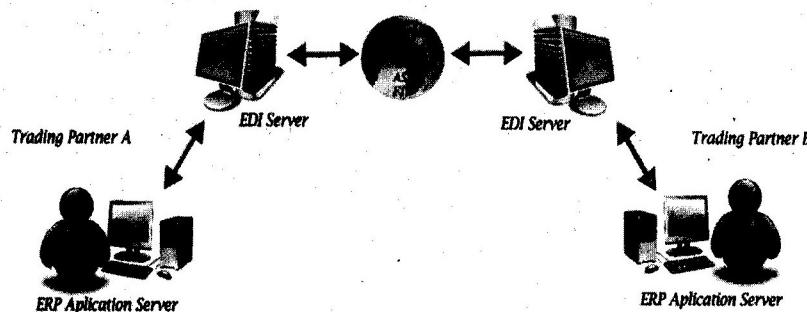
- Step 1:** Bank issues and activates a credit card to customer.
- Step 2:** Customer presents credit card information to merchant site or to merchant from whom he/she want to purchase a product/service.
- Step 3:** Merchant validates customer's identity by asking for approval from card brand company.
- Step 4:** Card brand company authenticates the credit card and paid the transaction by credit. Merchant keeps the sales slip.
- Step 5:** Merchant submits the sales slip to acquirer banks and gets the service chargers paid to him/her.
- Step 6:** Acquirer bank requests the card brand company to clear the credit amount and gets the payment.
- Step 6:** Now card Brand Company asks to clear amount from the issuer bank and amount gets transferred to card Brand Company.

#### **Question 6: What is EDI? Write advantages of EDI.**

**Ans:**

**EDI** (Electronic Data Interchange) is the transfer of data from one computer system to another by standardized message formatting, without the need for human intervention.

### EDI Method



### Advantage:-

- Reduction in data entry errors:** - Very less chances to enter wrong data.
- Shorter processing life cycle:** - it reduces the processing time. A document is transferred to concern people immediately. orders can be processed as soon as they are entered into the system. This reduced the processing time of the transferred documents.
- Electronic form of data:** It is easy to circulate electronic data from one computer to another computer.
- Reduction in paperwork:** it reduces manual works. All manual works are replaced with electronic documents.

- Cost Effective** – As time is saved and orders are processed very effectively, EDI proves to be highly cost effective.
- Standard communication:** EDI enforces standards on the content of data and its format which leads to good communication.

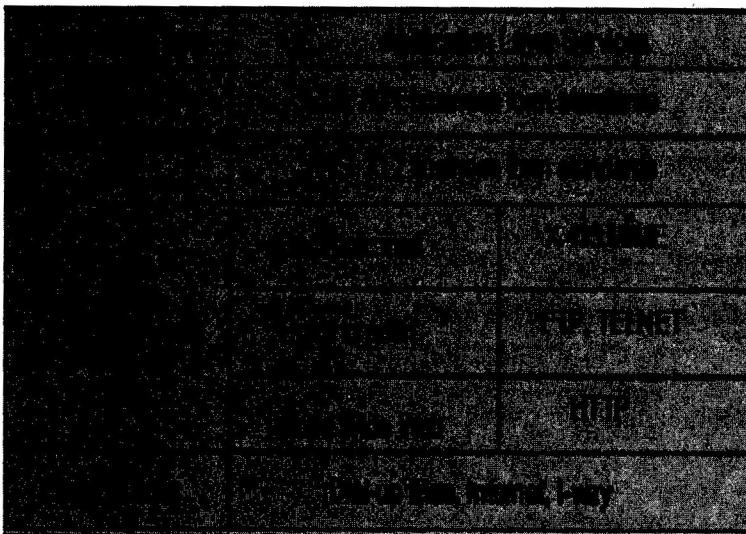
### Question 7: Explain Layered architecture of EDI.

Ans:

- Semantic layer**:- It describes the business application that is driving EDI .For a procurement application, this translates into requests for quotes, price quotes, purchase orders, acknowledgements & invoices.
- EDI standards**:- It specify business form structure and it also influence the content at application layer. The most two important standards are:-
  - EDIFACT**: - The EDIFACT standard provides a set of syntax rules to structure, an interactive exchange protocol and provides a set of standard messages which allow multi-country and multi-industry exchange of electronic business documents. EDIFACT is widely used across Europe, mainly due to the fact that many companies adopted it very early on. EDIFACT has seen some adoption in the ASPAC region, however, there are currently more XML-based standards being used in this particular region today.
  - ANSI X12**:- ANSI X12 was originally conceived to support companies across different industry sectors

in North America however today there are more than 300,000 companies worldwide using X12 EDI standards in daily business transactions. ASC X12 also contributes to UN/EDIFACT messages that are used widely outside of the United States.

- **EDI transport layer:** - it corresponds closely with the non-electronic activity of sending a business form one company A to company B using HTTPS, HTTP, FTP etc.
- **Physical n/w infrastructure layer:** - it describes infrastructure which is used to transport data. This includes dial up modem based connection and other physical devices.



## CHAPTER 3: BUSINESS MODEL

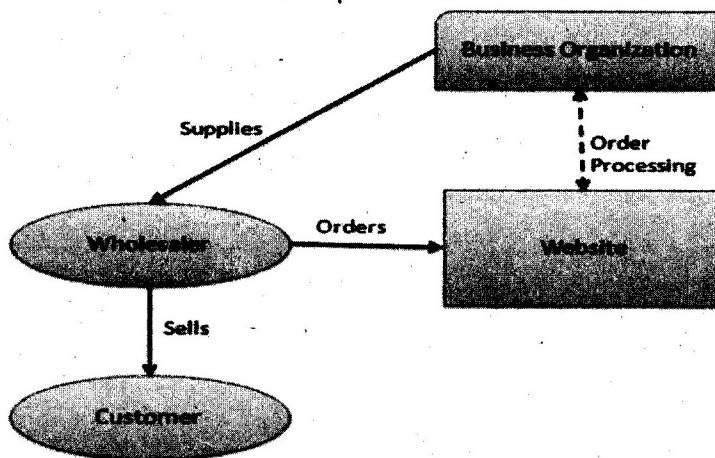
### Question 1: Explain E-commerce Business Model.

**Ans:**

#### Business - to - Business (B2B)

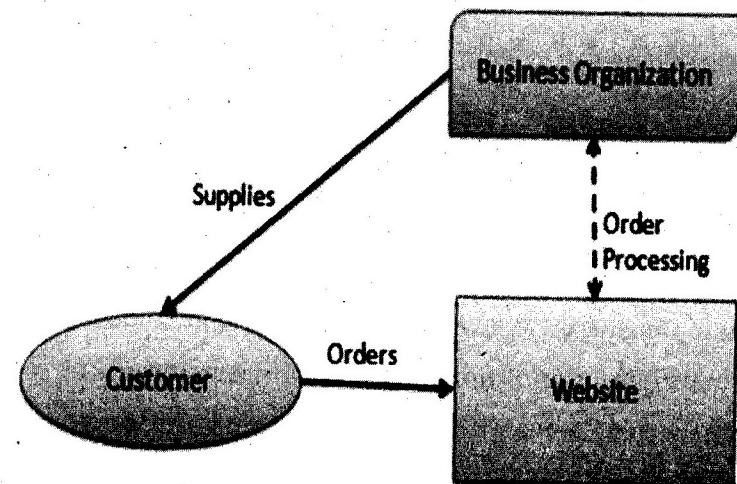
In **B2B** business model, a website sells its product to an intermediate buyer who then sells the product to the final customer. Business to business transactions are the backbone of the automobile industry. Many vehicle components are manufactured independently and auto manufacturers purchase these parts to assemble automobiles. Tires, batteries, electronics, hoses and door locks, for example, usually are manufactured by various companies and sold directly to automobile suppliers and supplier sold to the retailers.

As an **example**, a wholesaler places an order from a company's website and after receiving the consignment, sells the product to final customer who comes to buy the product at wholesaler's retail outlet.



#### Business - to - Consumer (B2C)

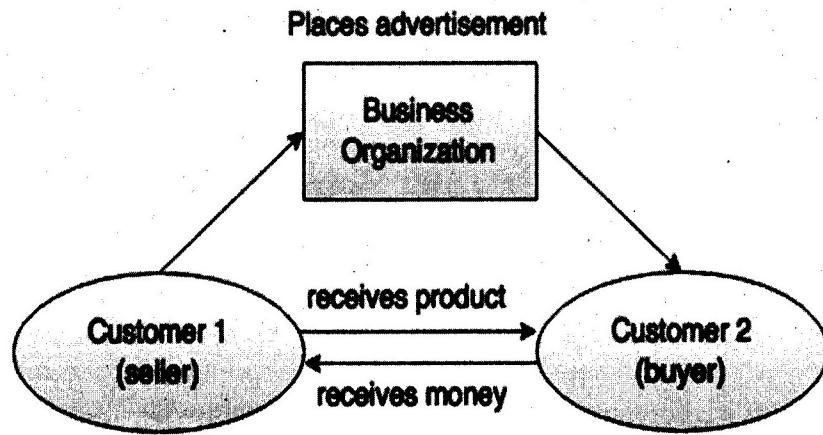
In **B2C** business model a website sells its product directly to a customer. A customer can view products shown on the website of business organization. The customer can choose a product and order the same. Website will send a notification to the business organization via email and organization will dispatch the product/goods to the customer.



#### Consumer - to - Consumer (C2C)

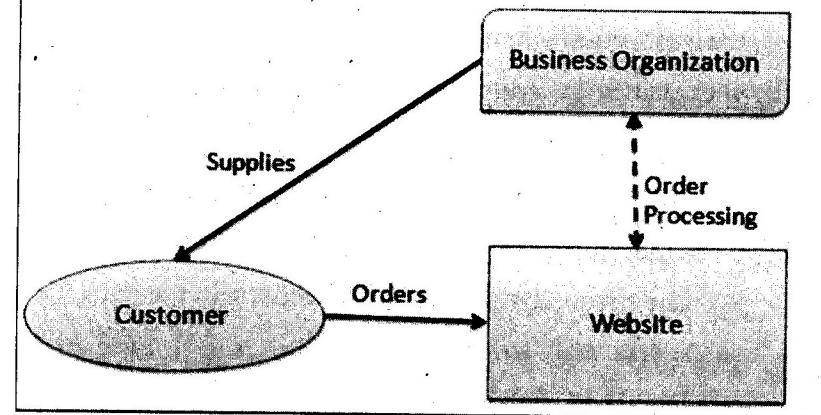
In **C2C** business model a website helps consumer to sell their assets like residential property, cars, motorcycles etc. or rent a room by publishing their information on the website. Website may or may not charge the consumer for its services. Another consumer may opt to buy the product

of the first customer by viewing the post/advertisement on the website.



### Consumer - to - Business (C2B)

In this model, a consumer approaches website showing multiple business organizations for a particular service. Consumer places an estimate of amount he/she wants to spend for a particular service. **For example**, comparison of interest rates of personal loan/ car loan provided by various banks via website. Business organization that fulfils the consumer's requirement within specified budget approaches the customer and provides its services.



### Business - to - Government (B2G)

B2G model is a variant of B2B model. Such websites are used by government to trade and exchange information with various business organizations. Such websites are accredited by the government and provide a medium to businesses to submit application forms to the government.



### Question 2: What is digital Certificate?

**Ans:**

Digital Certificates are a means by which consumers and businesses can utilise the security applications of **Public Key Infrastructure (PKI)**. PKI comprises of the technology to enables secure e-commerce and Internet based communication.

**Security Features:-**

- **Identification / Authentication:** The persons / entities with whom we are communicating are really who they say they are.
- **Confidentiality:** The information within the message or transaction is kept confidential. It may only be read and understood by the intended sender and receiver.
- **Integrity:** The information within the message or transaction is not tampered accidentally or deliberately with en route without all parties involved being aware of the tampering.
- **Non-Repudiation:** The sender cannot deny sending the message or transaction, and the receiver cannot deny receiving it.
- **Access Control:** Access to the protected information is only realized by the intended person or entity.
- All the above security properties can be achieved and implemented through the use of Public Key Infrastructure (in particular **Digital Certificates**).

**Question 3: What is SSL? How does it work?**

Ans:

SSL/TLS are protocols used for encrypting information. An SSL Certificate is a standard technology that establishes an

encrypted connection between a web server and a web browser. It enables encrypted communication between a web server and a web browser. When an SSL certificate is used, the information becomes unreadable to everyone except for the server you are sending the information to.

The following is a standard SSL handshake when RSA key exchange algorithm is used:

- **Client Hello:** - Information that the server needs to communicate with the client using SSL including SSL version number, cipher settings, session-specific data.
- **Server Hello:** Information that the client needs to communicate with the server using SSL including SSL version number, cipher settings, session-specific data and including Server's Certificate (Public Key)
- **Authentication and Pre-Master Secret:** Client authenticates the server certificate. (e.g. Common Name / Date / Issuer). Client (depending on the cipher) creates the pre-master secret for the session, Encrypts with the server's public key and sends the encrypted pre-master secret to the server.
- **Decryption and Master Secret:**- Server uses its private key to decrypt the pre-master secret, Both Server and Client perform steps to generate the master secret with the agreed cipher.

- **Generate Session Keys:**-Both the client and the server use the master secret to generate the session keys, which are symmetric keys used to encrypt and decrypt information exchanged during the SSL session.
- **Encryption with Session Key:** - Both client and server exchange messages to inform that future messages will be encrypted.

#### Question 4: Explain Online Auction procedure

Ans:

An **online auction** is a service in which **auction** users or participants sell or bid for products or services via the **Internet**. Virtual **auctions** facilitate **online** activities between buyers and sellers in different locations or geographical areas.

**Advantages:**

- No fixed time constraint
- Flexible time limits
- No geographical limitations
- Offers highly intensive social interactions
- Time and money saving
- Includes a large numbers of sellers and bidders, which encourages a high-volume online business

**Dis-advantage:**

- False promises

- Chances of the Product is stolen
- Risk of items
- Fake sites

#### Procedures of online Auction

- Sellers register a particular item of auction at online auction website with images, description, minimum bid, duration and terms and conditions.
- Bidders registered at online auction web site
- Start bidding
- Buyer pays the price
- Item is dispatched

#### Question 5. What is Online Trading? Write advantage and dis-advantage of it.

Ans:

**Online trading** is basically the act of buying and selling financial products through an **online trading** platform. These platforms are normally provided by **internet** based brokers and are available to every single person who wishes to try to make money from the market.

**Advantages:**

- If there is a market opportunity, investors can make a decision and get real time stock trading without having to call or visit the broker's office.
- It is easy to open and manage your account online.
- Investors can access their accounts online 24/7.
- Online trading is secure, and you can make a lot of money if you use it smartly and carefully.
- Online trading favours active traders who require frequent trades and demand lesser commission rates

#### **Disadvantages:**

- Online trading is a risky business and you can always potentially lose money.
- Sometimes, Internet connection can be a problem or the website itself loads very slow.
- Investors may incur a loss due to mechanical or platform failures.

#### **Procedure of online trading:-**

- Find an online brokerage.
- Complete an account application for Demat Account and Online trading Account.
- One accounts are opened
- Allocates the funds from the bank

- Brokerage's online trading interfaces vary; however, the basic approach is rather universal.
- Go to the trading page of your brokerage account. Alternatively, you can look up a stock you are interested in trading and select to trade that security.
- Input the ticker symbol of the stock you wish to buy. Most online brokerages allow you to look up the ticker symbol using the company's name.

#### **Question 6: Write E-Shopping procedure.**

**Ans:**

- Sitting on **computer**.
- The **Web server** sends her order to the **order manager**. This is a central computer that sees orders through every stage of processing from submission to dispatch.
- The **order manager** queries a database to find out whether what the customer wants is actually in stock.
- If the item is not in stock, the **stock database system** can order new supplies from the wholesalers or manufacturers. This might involve communicating with order systems at the manufacturer's HQ to find out estimated supply times while the customer is still sitting at her computer (in other words, in "real time").

- The stock database confirms whether the item is in stock or suggests an estimated delivery date when supplies will be received from the manufacturer.
- Assuming the item is in stock, the order manager continues to process it. Next it communicates with a **merchant system** (run by a credit-card processing firm or linked to a bank) to take payment using the customer's credit or debit card number.
- The merchant system might make extra checks with the customer's own bank computer.
- The **bank computer** confirms whether the customer has enough funds.
- The merchant system authorizes the transaction to go ahead, though funds will not be completely transferred until several days later.
- The order manager confirms that the transaction has been successfully processed and notifies the Web server.
- The Web server shows the customer a Web page confirming that her order has been processed and the transaction is complete.
- The order manager sends a request to the warehouse to dispatch the goods to the customer.

- The goods are delivered to the customer

**Question 7: Write Advantage and dis-advantage of E-shopping (On-line shopping).**

**Ans:**

**Advantages:-**

**Convenience of online shopping:** Customers can purchase items from the comfort of their own homes or work place. Shopping is made easier and convenient for the customer through internet. It is also easy to cancel the transactions.

**No pressure shopping:** Generally, in physical stores, the sales representatives try to influence the buyers to buy the product. There can be some kind of pressure, whereas the customers are not pressurized in any way in online stores.

**Online shopping saves time:** Customers do not have to stand in queues in cash counters to pay for the products that have been purchased by them. They can shop from their home or work place and do not have to spend time traveling. The customers can also look for the products that are required by them by entering the key words or using search engines.

**Comparisons:** Companies display the whole range of products offered by them to attract customers with different tastes and needs. This enables the buyers to choose from a variety of models after comparing the finish, features and price of the

products on display. Sometimes, price comparisons are also available online.

**Availability of online shop:** The mall is open on 365 x 24 x 7. So, time does not act as a barrier, wherever the vendor and buyers are.

**Online tracking:** Online consumers can track the order status and delivery status tracking of shipping is also available.

**Online shopping saves money:** To attract customers to shop online, e-tailers and marketers offer discounts to the customers. Due to elimination of maintenance, real-estate cost, the retailers are able to sell the products with attractive discounts through online. Sometimes, large online shopping sites offer store comparison.

#### **Disadvantages:-**

**Delay in delivery:** Long duration and lack of proper inventory management result in delays in shipment. Though the duration of selecting, buying and paying for an online product may not take more than 15 minutes; the delivery of the product to customer's doorstep takes about 1-3 weeks. This frustrates the customer and prevents them from shopping online.

**Lack of significant discounts in online shops:** Physical stores offer discounts to customers and attract them so this makes it difficult for e-tailors to compete with the offline platforms.

**Lack of touch and feel of merchandise in online shopping:** Lack of touch-feel-try creates concerns over the quality of the product on offer. Online shopping is not quite suitable for clothes as the customers cannot try them on.

**Lack of interactivity in online shopping:** Physical stores allow price negotiations between buyers and the seller. The show room sales attendant representatives provide personal attention to customers and help them in purchasing goods. Certain online shopping mart offers service to talk to a sales representative,

**Lack of shopping experience:** The traditional shopping exercise provides lot of fun in the form of show-room atmosphere, smart sales attendants, scent and sounds that cannot be experienced through a website. Indians generally enjoy shopping. Consumers look forward to it as an opportunity to go out and shop.

**Lack of close examination in online shopping:** A customer has to buy a product without seeing actually how it looks like. Customers may click and buy some product that is not really required by them. The electronic images of a product are sometimes misleading. The colour, appearance in real may not match with the electronic images.

People like to visit physical stores and prefer to have close examination of good, though it consumes time. The electronic

images vary from physical appearance when people buy goods based on electronic images.

**Frauds in online shopping:** Sometimes, there is disappearance of shopping site itself. In addition to above, the online payments are not much secured. So, it is essential for e-marketers and retailers to pay attention to this issue to boost the growth of e-commerce. The rate of cyber crimes has been increasing and customers' credit card details and bank details have been misused which raise privacy issues

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## **CHAPTER 4: M-COMMERCE**

**Question 1: What is M-commerce? Write Advantage and Dis-advantage of it.****Ans:**

The Information technology (IT) and telecommunication technologies (TCT) convergence has given the by-product i.e. M-commerce which can also be regarded as extension of E-commerce to wireless mediums. This Convergence provides and enables some unique services which is not possible in E-commerce.

Internet + E-commerce + Wireless = M-commerce . M-Commerce is a part of E-commerce which allows people to do the transaction through mobile devices.

**Advantages:**

- **Cover wild distance:** Mobile is the only technology which is now become necessary for any person in social and business life than computers. So, it is easy to reach users through M-Commerce.
- **Consumer deals:** As more users use M-Commerce, there are lots of companies' uses the M-Commerce site to reach them by giving different and better deals in comparison to their competitor.
- **Savings:** Companies try to reach to the consumer directly through M-Commerce, so users have no need to go far to

the store physically and at the end it saves user's time and money.

- **Easy to use:** There is no need of the skilled consumer.

Buyers can have look thousands of items on their cell phones and there is no need of online checkout process.

**Disadvantages of Mobile Commerce:**

- **Smartphone limitation:** Mobile has no big screen like desktop or laptops, so sometimes users tried to navigate more and more to choose just one item from thousands. It affects shopping rates.
- **Habituate:** Every new technology has some problem at the starting phase. Here M-Commerce is a new application, so sometimes people avoid changing which are rapidly changed. As they are habituated to buy products from M-Commerce.
- **Risk factor:** Each business has its own risk. Mobile commerce is the growing field and a lot of investment in this field becomes risky. Because technology changes day by day. Moreover, there less security in the wireless network, so in data transfer hacking chances are more.

- **Connectivity:** Mobile commerce needs high-speed connectivity of 3G. Otherwise, it becomes hectic for the user to go through the entire product purchase process.

## Question 2: Challenges or Impediments of M-Commerce

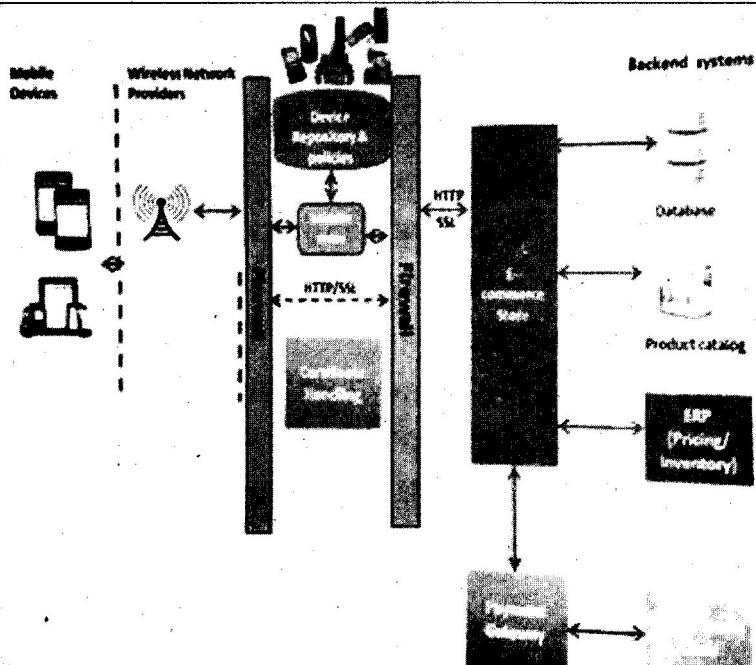
**Ans:**

Mobile commerce is facing many challenges such as security issues, lack of ubiquitous wireless network coverage, lack of standards, and technical mismatches among various wireless devices & smartphones. Furthermore, there are many other issues that indirectly have a huge impact on this industry. These include high cost of smartphones; slow access speed etc. creates hurdles in the growth of mobile commerce industry. Main mobile commerce challenges include:-

- **User interface:** M-commerce applications depend a lot on the user interface. Since a user interface is the first thing a user experiences while dealing with M-commerce. User interface should be dynamic and adaptable.
- **Speed concern:** M-commerce applications are also limited by the slow or unstable connections, fearing they would be cut off in the middle of a monetary transaction; many users limit their use of M-commerce.

- **Pricing of M-commerce services:** Wireless carriers also face challenges involving how to price mobile commerce services, and because several carriers are likely to be involved in completing a mobile commerce, another issue is how to divide revenues among multiple carriers.
- **Privacy and Advertisement:** M-commerce transactions involve the collection of personal information about consumers, including their financial details. Given this, m-commerce transactions raise privacy issues for consumers.
- **Screen Size:** It is limiting user experience.
- **Web pages performance:** web page is not optimized for mobile devices resulting in slower page loads on mobile platforms.
- **GPS (Global Positioning System):** on the one side giving benefits to the user by telling the directions and one can get the benefit during an emergency but on the other side a user can also send his location which may be used by someone else to track the current location of the user.

## Question 3: Explain M-commerce Application Flow



- User can use a mobile device to purchase a product
- The transaction is supported by the wireless network provider by providing wireless network bandwidth.
- The mobile request will then be intercepted by mobile middleware.
- The request reaches the E-Commerce store which does a variety of tasks:-
  - Gets the inventory and pricing details
  - Get product catalogue
  - Use payment gateway for making payment.

#### Question 4: Explain Emerging Trends of M-commerce and challenges.

**Ans:**

**Mobile wallet:** it is used to make financial transaction. Mobile payment has become a competitive arena. Market leaders like Google Wallet, Apple Pay, PayPal, Venmo, V.me (by Visa), Masterpass (by MasterCard) and more are trying to consolidate their position in the face of growing competition fueled by new entrants.

**Loyalty card resurgence:** Marketers can now deliver mobile loyalty cards, related rewards/points statuses and rewards certificates directly to customers' phones.

Marketers will realize how effective the mobile wallet can be when it comes to loyalty.

**Mobile Shopping:** Various on-line sellers have e-shop apps that run on smart mobile. User can easily use this apps and place the order.

**In-store personalization :** Apps will become personalized and more helpful in-store and will adapt based on a customer's location.

**NFC-enabled payment will increase:** Near Field Communication technology allows easy peer-to-peer sharing of files and transfer of mobile payments. Simply waving mobile phone synced with bank cards on the payment terminal expedites the payment.

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## CHAPTER 5: E-SECURITY

### Question 1: Explain different types of Security.

Ans:

- Application security,
- Computer security,
- Data security,
- Information security
- Network security
- Application Security

#### Application security:

Application security prevents attack and vulnerabilities on an application. This application can be a mobile application or any other application such as web application etc.

#### Computer Security:

Computer security is about securing a computer system (Desktop or Laptop etc.) or a host. This type of security ensures a computer virus free with the help of anti-virus software.

#### Data Security:

Data Security involves security of electronic data which is present on any hard-disks secondary storage either of computer system or on network, on server, etc. Such security can be implemented by using passwords, cryptography, biometric authentication, or through access control list etc.

### **Information Security:**

Information Security is defined as protection of information and information systems from unauthorized access, use, disclosure, disruption, modification, perusal, inspection, recording or destruction.

### **Network Security:**

Network Security takes care of a network, its associated processes and aims to secure it. This network can be an organizational / company internal network or any external network. All data which is coming inside the network and going outside the network is analysed and monitored to keep the network danger free. Moreover, every process which is part of the network is also monitored.

### **Question 2: Explain Different types of Security Services.**

**Ans:**

#### **Confidentiality**

Confidentiality means keeping information secret from unauthorized access and is probably the most common aspect of information security. It is important to protect confidential information.

#### **Integrity**

Information needs to be changed constantly. Integrity means that changes should be done only by authorized users and through authorized mechanisms.

### **Availability**

The information created and stored by an organization needs to be available to authorized users and applications. Information needs to be changed constantly, which means that it must be accessible to those authorized to access it. Unavailability of information is just as harmful to an organization as a lack of confidentiality or integrity.

### **Authentication**

Authentication is the process by which a person or other entity proves. For example, a bank authenticates a person or entity that deal before transferring something valuable, such as information or money, to or from, it.

### **Non-Repudiation**

Non-repudiation is the prevention of either the sender or the receiver denying a transmitted message. A system must be able to prove that certain messages were sent and received. Non-repudiation is often implemented by using digital signatures.

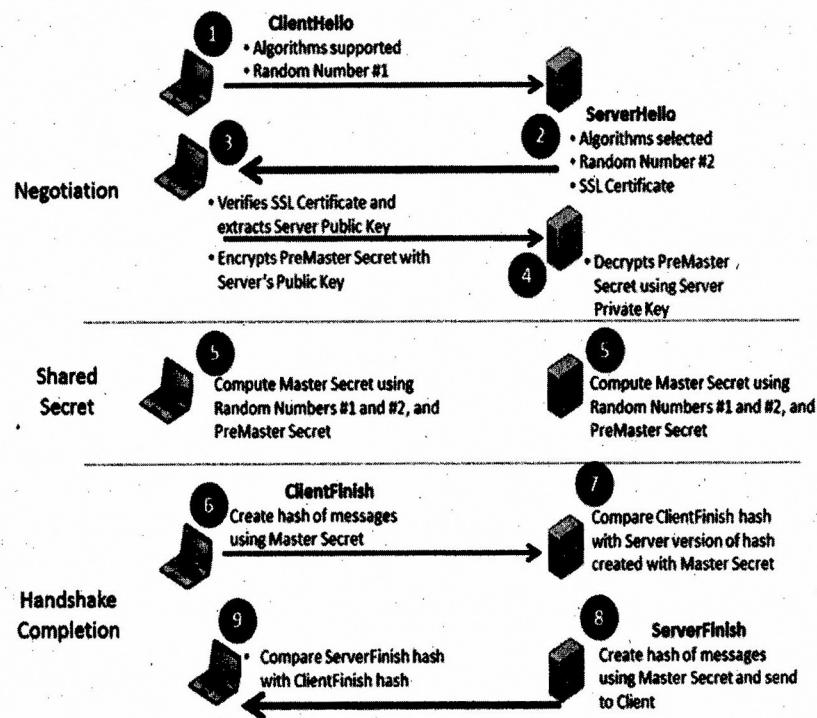
**For example**, a user A sent a message to user B. At later stage, user A should not deny of having sent the message to user B

### **Question 3: what is SSL? How does it work?**

**Ans:**

SSL (Secure Sockets Layer) is the standard security technology for establishing an encrypted link between a web server and a browser. This link ensures that all data passed

between the web server and browsers remain private and integral. SSL is an industry standard and is used by millions of websites in the protection of their online transactions with their customers.



- The client sends the server the client's SSL version number, cipher settings, randomly generated data, and other information the server needs to communicate with the client using SSL.

- The server sends the client the server's SSL version number, cipher settings, randomly generated data, and other information the client needs to communicate with the server over SSL. The server also sends its own digital certificate and, if the client is requesting a server resource that requires client authentication, requests the client's digital certificate.
- The client uses the information sent by the server to authenticate the server. If the server cannot be authenticated, the user is warned of the problem that an encrypted and authenticated connection cannot be established. If the server can be successfully authenticated, the client proceeds.
- Using all data generated in the handshake so far, the client creates the **premaster secret** for the session, encrypts it with the server's public key (obtained from the server's digital certificate), and sends the encrypted **premaster secret** to the server.
- If the server has requested client authentication (an optional step in the handshake), the client also signs another piece of data that is unique to this handshake and known by both the client and server. In this case the client sends both the signed data and the client's

own digital certificate to the server along with the encrypted **premaster secret**.

- If the server has requested client authentication, the server attempts to authenticate the client. If the client cannot be authenticated, the session is terminated. If the client can be successfully authenticated, the server uses its private key to decrypt the **premaster secret**, then performs a series of steps which the client also performs, starting from the same **premaster secret** to generate the **master secret**.
- Both the client and the server use the **master secret** to generate session keys which are symmetric keys used to encrypt and decrypt information exchanged during the SSL session and to verify its integrity.
- The client informs the server that future messages from the client will be encrypted with the session key. It then sends a separate encrypted message indicating that the client portion of the handshake is finished.
- The server sends a message to the client informing it that future messages from the server will be encrypted with the session key. It then sends a separate encrypted message indicating that the server portion of the handshake is finished.

- The SSL handshake is now complete, and the SSL session has begun. The client and the server use the session keys to encrypt and decrypt the data they send to each other and to validate its integrity.

**Question 4: Explain Firewall. Write advantage and disadvantage of firewalls.**

**Ans:-**

The firewall is the first line of defence for any computer system or network. All packets that enter the network should come through this point. A modern firewall is a system of applications and hardware working together.

**Packet Filtering** was designed to look at header information of the packet. Packet Filtering, shown was the first type of firewall used by many organisations to protect their network. The general method of implementing a packet filter was to use a router. These routers had the ability to either permit or deny packets based on simple rules.

**Proxy Servers** use software to intercept network traffic that is destined for a given application. The proxy server, shown in recognises the request, and on behalf of the client makes the request to the server. In this, the internal client never makes a direct connection to the external server.

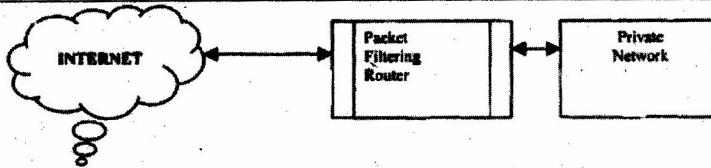


Figure 2: Packet Filtering Router

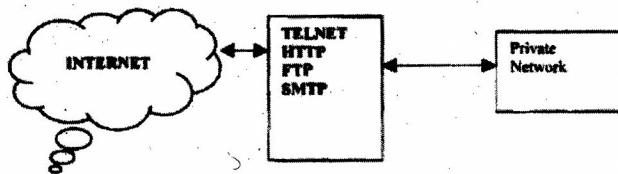


Figure 3: Application level gateway or Proxy server

### Intrusion Detection System (IDS)

Intrusion Detection System is a combination of hardware and software systems that monitor and collect information and analyse it to detect attacks or intrusions. Some IDSs can automatically respond to an intrusion based on collected library of attack signatures. IDSs uses software based scanners, such as an Internet scanner; for vulnerability analysis. Intrusion detection software builds patterns of normal system usage; triggering an alarm any time when abnormal patterns occur.

#### Advantage of firewalls:

- Protection from vulnerable services
- Controlled access to system
- Enhanced privacy
- Policy enforcement

#### Dis-advantage

- Restricted access to desirable services
- Large potential backdoors
- Little protection from insider attack

### Question 5: What are firewalls? Explain different types of firewall architecture?

**Ans.** Firewall is a hardware or software that is used to restrict the user to peek inside the internal of web site. It also protect from authorized access by the user.

It also offers additional protection to local users who like to browse the intranet to the internet.

Types:-

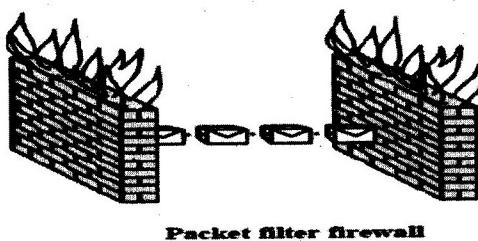
1. **Packet filter firewalls**:- It is a primary firewall that is used to filter the data packets from the traffic & protocol transmits the packet from source to destination. It is transparent and less expensive. It can be run on minimum processor. This type of firewall is common for today.

On the Internet, packet filtering is the process of passing or blocking packets at a network interface based on source and destination addresses, ports, or protocols. The process is used in conjunction with packet filtering and Network Address Translation (NAT). Packet filtering is often part of a firewall

program for protecting a local network from unwanted intrusion.

**There are two types of packet filter firewalls**

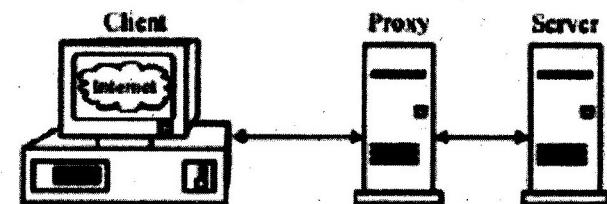
- **Stateless Packet Filtering:**-If the information about the passing packets is not remembered by the firewall, then this type of filtering is called stateless packet filtering.
- **Stateful Packet Filtering:**-If the firewall remembers the information about the previously passed packets, then that type of filtering is stateful packet filtering. These can be termed as smart firewalls. This type of filtering is also known as Dynamic packet filtering.



2. **Proxy server:** - It is a hardware or software that works between client & server machine. a proxy server is a server that acts as an intermediary between a workstation user and the Internet so that the enterprise can ensure security, administrative control, and caching

service. A proxy server is associated with or part of a gateway server that separates the enterprise network from the outside network and a firewall server that protects the enterprise network from outside intrusion. It is divided into two types:-

- **Application layer gateways:** - It is used to establish a connection to a remote system on behalf of specific application. Basically it is a collection application proxy with one to one relationship between application & proxy.
- **Circuit level gateways:** - Such type of proxy server doesn't require specific application. It has ability to communicate any new application.



**Question 6: what is Digital Signature? How does it work?**

**Ans:**

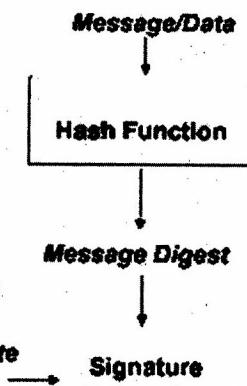
A digital signature is basically a way to ensure that an electronic document (e-mail, spreadsheet, text file, etc.) is authentic.

Digital signatures rely on certain types of encryption to ensure authentication. Encryption is the process of taking all the data that one computer is sending to another and encoding it into a form that only the other computer will be able to decode. Authentication is the process of verifying that information is coming from a trusted source.

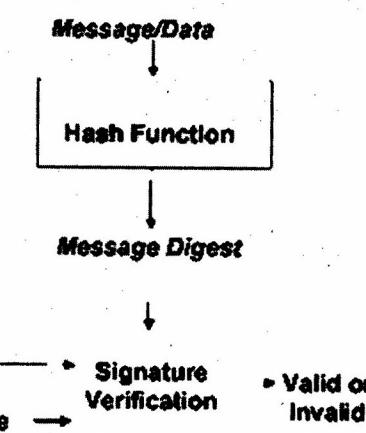
#### How Does it work?

Digital signatures are based on public key cryptography, also known as asymmetric cryptography. Using a public key algorithm such as RSA, one can generate two keys that are mathematically linked: one private and one public. To create a digital signature, signing software (such as an email program) creates a one-way hash of the electronic data to be signed. The private key is then used to encrypt the hash. The encrypted hash -- along with other information, such as the hashing algorithm -- is the digital signature. The reason for encrypting the hash instead of the entire message or document is that a hash function can convert an arbitrary input into a fixed length value, which is usually much shorter. This saves time since hashing is much faster than signing.

#### Signature Generation



#### Signature Verification



#### Question 7: what is Cyber Crime? Classification of Cyber Crimes.

**Ans:**

Cyber-crime encompasses any criminal act dealing with computers and networks (called hacking). Additionally, cyber-crime also includes traditional crimes conducted through the Internet. For example; hate crimes, telemarketing and Internet fraud, identity theft, and credit card account thefts are considered to be cyber crimes when the illegal activities are committed through the use of a computer and the Internet.

**CRIME AGAINST INDIVIDUALS:** Cybercrimes committed against individual persons include such types of crimes like transmission of Child Pornography, Harassment

of any one with the use of a computer such as e-mail, Cyber Defamation, Hacking, Indecent exposure, E-mail spoofing, IRC Crime (Internet Relay Chat), Net Extortion, Malicious code, Trafficking, Distribution, Posting, Phishing, Credit Card Fraud and Dissemination of obscene material including Software Piracy. The potential harm of such a crime to individual person can hardly be bigger.

**CRIME AGAINST PROPERTY :** Another classification of Cyber-crimes is that, Cybercrimes against all forms of property. These crimes include computer vandalism (obliteration of others 'property), Intellectual Property Crimes, Threatening, Salami Attacks. This kind of crime is normally prevalent in the financial institutions or for the purpose of committing financial crimes. An important feature of this type of offence is that the amendment is so small that it would normally go unobserved.

**CRIME AGAINST ORGANIZATION:** The third type of Cyber-crimes classification relate to Cybercrimes against organization. Cyber Terrorism is one discrete kind of crime in this kind. The growth of internet has shown that the standard of Cyberspace is being used by individuals and groups to pressure the international governments as also to terrorize the citizens of a country. This crime obvious itself into terrorism when a human being "cracks" into a government

or military maintained website. It is across the world agreed that any and every system in the world can be cracked.

**CRIME AGAINST SOCIETY:** The forth type of Cyber-crimes relate to Cybercrimes against society. In this category forgery, cyber terrorism, web jacking, polluting the Youth through Indecent, Financial Crimes, Sale of Illegal Articles, Net Extortion, Cyber Contraband, Data Diddling, Salami Attacks, Logic Bombs types of crime is included. Forgery currency notes, revenue stamps, mark sheets etc can be forged using computers and high quality scanners and printers. Web Jacking hackers gain access and control over the website of another, even they change the content of website for fulfilling political objective or for money.

#### Question 8: Explain Cyber offence and penalties related to IT Act.

2000.

**Ans:**

Section	Offence	Punishment
65	Tampering with Computer Source Code	Imprisonment up to 3 years or fine up to Rs 2 lakhs

66	Computer Related Offences	Imprisonment up to 3 years or fine up to Rs 5 lakhs
66-A	Sending offensive messages through Communication service, etc...	Imprisonment up to 3 years and fine
66-B	Dishonestly receiving stolen computer resource or communication device	Imprisonment up to 3 years and/or fine up to Rs. 1 lakh
66-C	Identity Theft	Imprisonment of either description up to 3 years and/or fine up to Rs. 1 lakh
66-D	Cheating by Personation by using computer resource	Imprisonment of either description up to 3 years and /or fine up to Rs. 1 lakh

66-E	Violation of Privacy	Imprisonment up to 3 years and /or fine up to Rs. 2 lakh
66-F	Cyber Terrorism	Imprisonment extend to imprisonment for Life
67	Publishing or transmitting obscene material in electronic form	On first Conviction, imprisonment up to 3 years and/or fine up to Rs. 5 lakh On Subsequent Conviction imprisonment up to 5 years and/or fine up to Rs. 10 lakh
67-A	Publishing or transmitting of material containing sexually explicit act, etc... in electronic form	On first Conviction imprisonment up to 5 years and/or fine up to Rs. 10 lakh On Subsequent Conviction imprisonment up to 7 years and/or fine up to Rs. 10 lakh

		On first Conviction imprisonment of either description up to 5 years and/or fine up to Rs. 10 lakh On Subsequent Conviction imprisonment of either description up to 7 years and/or fine up to Rs. 10 lakh
67-B	Publishing or transmitting of material depicting children in sexually explicit act etc., in electronic form	
67-C	Intermediary intentionally or knowingly contravening the directions about Preservation and retention of information	Imprisonment up to 3 years and fine
68	Failure to comply with the directions given by Controller	Imprisonment up to 2 years and/or fine up to Rs. 1 lakh
69	Failure to assist the agency referred to in sub section (3) in regard	Imprisonment up to 7 years and fine

	interception or monitoring or decryption of any information through any computer resource	
69-A	Failure of the intermediary to comply with the direction issued for blocking for public access of any information through any computer resource	Imprisonment up to 7 years and fine
69-B	Intermediary who intentionally or knowingly contravenes the provisions of sub-section (2) in regard monitor and collect traffic data or information through any computer resource for cybersecurity	Imprisonment up to 3 years and fine
70	Any person who secures access or attempts to	Imprisonment of either description up to 10 years

	secure access to the protected system in contravention of provision of Sec. 70	and fine
70-B	Indian Computer Emergency Response Team to serve as national agency for incident response. Any service provider, intermediaries, data centres, etc., who fails to prove the information called for or comply with the direction issued by the ICERT.	Imprisonment up to 1 year and/or fine up to Rs. 1 lakh
71	Misrepresentation to the Controller to the Certifying Authority	Imprisonment up to 2 years and/ or fine up to Rs. 1 lakh.
72	Breach of Confidentiality and privacy	Imprisonment up to 2 years and/or fine up to Rs. 1 lakh.
72-A	Disclosure of information in breach of lawful	Imprisonment up to 3 years and/or fine up to Rs.

	contract	5 lakh.
73	Publishing electronic Signature Certificate false in certain particulars	Imprisonment up to 2 years and/or fine up to Rs. 1 lakh
74	Publication for fraudulent purpose	Imprisonment up to 2 years and/or fine up to Rs. 1 lakh

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