# XII – STD Computer Applications
# Chapter 15 E-Commerce

**PART – II**

**II. Short Answer**

**1.Define E-Commerce?**

E-Commerce can be described as the process of buying or selling products, services or information via computer networks.

**2.Distinguish between E-Business and E-Commerce?**

**E-Business:**

E-Business is grounded on technologies such as Network Infrastructures (like Internet, Intranet, Extranet), Multimedia content & network publishing infrastructures (like HTML), Messaging & information distribution infrastructures (e-mail), and other Common business service infrastructures (Online Transaction Processing).

**E-Commerce**:

E-Commerce is commercial transaction through Internet, but E-Business entirely depends on the Internet for its every intra-company and inter-company activities such as marketing, fiancé, manufacturing, selling.

**3.Differentiate tangible goods and electronic goods with example of your own?**

**Tangible goods:**

Tangible form – e.g. a digital camera purchased by a consumer from an online. shopping website which might be delivered at the requested address.

**Electronic goods:**

Electronic form – e.g. a music album or a software downloaded from a site which might be delivered in electronic form.

**4.What is dotcom bubble and dotcom burst?**

**Dotcom Bubble:**

1. The Dotcom Bubble was a historic excessive growth (excessive assumption) of economy that occurred roughly between 1995 and 2000.
2. During the dotcom bubble, the value of equity markets grew exponentially with the NASDAQ composite index of US stock market rising from under 1000 points to more than 5000 points.

Dotcom Burst

1. The Nasdaq-Composite stock market index, fell from 5046.86 to 1114.11. This is infamously, known as the Dotcom Crash or Dotcom Burst.

2. This began on March 11,2000 and lasted until October 9,2002. During the crash, thousands of online shopping companies, like as Pets.com failed and shut down.

**5.Write a short note on out-sourcing?**

Out-sourcing are generally associated with B2B E-Commerce. If a company's work is hired to another company, it would be termed as out-sourcing.

**PART – III**

**Explain in Brief Answer**

**1.Describe how E-Commerce is related to socio-technological changes?**

Growth of E-Commerce is also related to the socio-technological changes. The more, the medium becomes deep-rooted, the more, are the users drawn towards it. Increase of users, increases the markets. As the markets expand, more business organizations are attracted. The more businesses accumulate it create competition. The competition leads to innovation; innovation in turn drives the development of technology; technology facilitates E-Commerce's growth.

**2.Write a short note on the third wave of E-Commerce?**

**The Third Wave of Electronic Commerce: 2010 – Present**

1. The third wave is brought on by the mobile technologies. It connects users via mobile devices for real-time and on-demand transactions, mobile technologies.
2. It connects users via mobile devices for real-time and on-demand transactions.
3. Not only the information is filtered by time, but also the geographic coordinates are used to screen the specific location-tailored information properly.
4. The term Web 3.0, summarize the various characteristics of the future Internet which include Artificial Intelligence, Semantic Web, Generic Database etc.

**3.Explain B2B module in E-Commerce?**

**Business to Business (B2B)**

In B2B E-Commerce, commercial transactions take place between different business organizations, through the Internet. For example, a cycle company may buy tyres from another company for their cycles. When compared to other models, the value per transaction in B2B transaction is high, because of bulk purchases. The company also might get the advantage of discounts on bulk purchases. Out-sourcing and Off-shoring are generally associated with B2B E-Commerce.

1. If a company's work is hired to another company, it would be termed as out-sourcing.
2. If the work is outsourced to a company, which is outside of its own country, is termed as off-shoring.

**4.Write a note on name-your-price websites?**

Name-your-price sites are just like normal retail sites. In contrast, the buyer

negotiates with the retailer for a particular product or service,

**https://in.hotels.com/**

**5.Write a note on physical product dispute of E-Commerce?**

Physical product disputes are a major disadvantage in E-Commerce. E-Commerce purchases are often made on trust. This is because, we do not have physical access to the product. Through Internet is an effective channel for visual and auditory information it does not allow full scope for our senses.

We can see pictures of the perfumes, but could not smell their fragrance; we can see pictures of a cloth, but not its quality. If we want to inspect something, we choose what we look at and how we look at it. But in online shopping, we would see only the pictures the seller had chosen for us. People are often much more comfortable in buying the generic goods (that they have seen or experienced before and in which there is little ambiguity) rather than unique or complex things via the Internet.

**IV. Explain in detail**

**1.Write about the development and growth of Electronic Commerce?**

The Development and Growth of Electronic Commerce:

Economists describe four distinct waves (or phases) that occurred in the Industrial Revolution. In each wave, different business strategies were successful. Electronic commerce and the information revolution brought about by the Internet likely go through such series of waves.

**The First Wave of Electronic Commerce: 1995 -2003**

(i) The Dotcom companies of first wave are mostly American companies. Thereby their websites were only in English. The Dotcom bubble had attracted huge investments to first wave companies.

(ii)As the Internet was mere read-only web (web 1.0) and network technology was in its beginning stage, the bandwidth and network security was very low.

(iii) Only EDI and unstructured E-mail remained as a mode of information exchange between businesses.

(iv) But the first wave companies enjoyed the first-move advantage and customers had left with no options.

**The Second Wave of Electronic Commerce: 2004 – 2009**

(i) The second wave is the rebirth of E-Commerce after the dotcom burst. The second wave is considered as the global wave, with sellers doing business in many countries and in many languages.

(ii) Language translation and currency conversion were focused in the second wave websites.

(iii) The second wave companies used their own internal funds and gradually expanded their E-Commerce opportunities.

(iv) As a result E-Commerce grows more steadily, though more slowly. The rapid development of network technologies and interactive web (web 2.0, a period of social media) offered the consumers more choices of buying. The increased web users nourished E-Commerce companies (mostly B2C companies) during the second wave.

**The Third Wave of Electronic Commerce: 2010 – Present**

(i) The third wave is brought on by the mobile technologies. It connects users via mobile devicesfor real-time and on-demand transactions, mobile technologies.

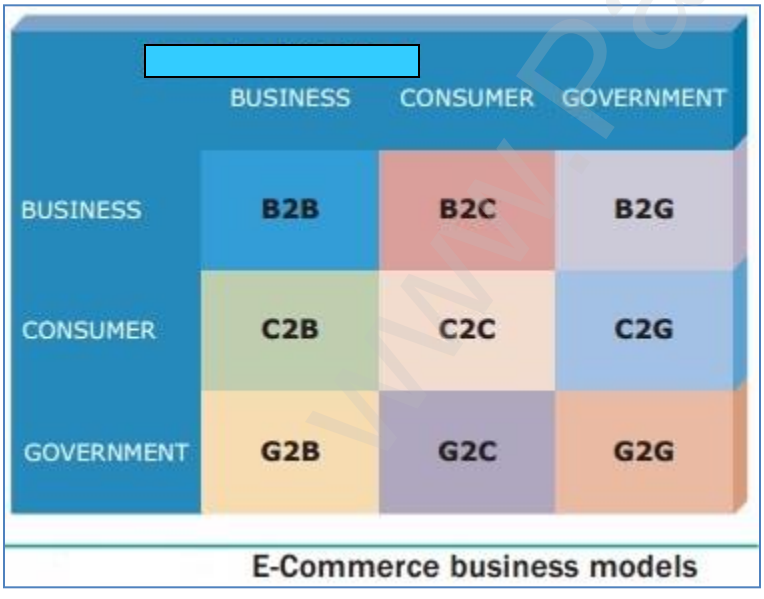
(ii) It connects users via mobile devices for real-time and on-demand transactions. Not only the information is filtered by time, but also the geographic coordinates are used to screen the specific location-tailored information properly.

(iii) The term Web 3.0, summarize the various characteristics of the future Internet which include Artificial Intelligence, Semantic Web. Generic Database etc.

**2.List all the E-Commerce business models and explain any four briefly?**

**Classification of E-Commerce Business models:**

Business organizations, Consumers and Government (also called as Administrations) are the major parties in the E-Commerce. Sometimes Employees (Informal workers) also indulge in this system. Based upon the entities involved in transaction, E-Commerce has been classified into the following typical categories. The model in which the government plays as an entity is termed as e- Governance.



E-Commerce business models

1. Business to Business (B2B)

2. Business to Consumer (B2C)
3. Business to Government (B2G)
4. Consumer to Business (C2B)
5. Consumer to Consumer (C2C)
6. Consumer to Government (C2G)
7. Government to Business (G2B)
8. Government to Consumer (G2C)
9. Government to Government (G2G)

**1. Business to Business (B2B):**

In B2B E-Commerce, commercial transactions take place between different business organizations, through the Internet. For example, a cycle company may buy tyres from another company for their cycles. When compared to other models, the value per transaction in B2B transaction is high, because of bulk purchases. The company also might get the advantage of discounts on bulk purchases.

Out-sourcing and Off-shoring are generally associated with B2B E-Commerce.

If a company's work is hired to another company, it would be termed as out-sourcing.

If the work is outsourced to a company, which is outside of its own country, is termed as off-shoring.

Business to Business

**3. Business to Consumer (B2C):**

In B2C E-Commerce, commercial transactions take place between business firms and their consumers. It is the direct trade between companies and end-consumers via the Internet. B2C companies sell goods, information or services to customers through online in a more personalized dynamic environment and is considered as real competitor for a traditional storekeeper. An example of B2C transaction is a book company selling books to customers. This mode is intended to benefit the consumer and can say B2C E-Commerce works as 'retail store' over Internet. **(Figure refer in book)**

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4. **Business to Government (B2G):**

B2G is a business model that refers to business organizations sells products, services or information to Governments or to its administrations. In other words, when a company get paid for its goods, services by the Government through Internet it is called as B2G model. B2G networks models provide a way for businesses to bid on Government projects or products those Governments might need for their organizations, e.g. A Government or its administration buys laptops for students from a business. **(Figure refer in book)**

5. **Consumer to Business (C2B):**

C2B can be described as a form of E-Commerce where, the transaction is originated by the consumers. The consumers will fix a set of requirements or specific price for a service or a commodity. C2B model, is also called as reverse auction model. Here, customer bid his price for a service or a product. Then E-Commerce business entity will match the requirements of the consumers to the best possible extent.

For instance, in a travel website (eg. yatra.com) a consumer may specify his dates of travel, his source and destination, number of tickets required and range of hotel etc. The website then finds out the various options for him which best meets his requirements. These websites generate revenue through affiliate links, sponsored advertisement or even a small commission in every booking, e.g. Name-your-price websites. **(Figure refer in book)**

**5. Consumer to Consumer (C2C):**

C2C in E-Commerce provides opportunity for trading of products or services among consumers who are connected through the Internet. In brief when something is bought and sold between two consumers using Internet it is called C2C E-Commerce. Here the websites act as a platform to facilitate the transaction. The electronic tools and Internet infrastructure are employed to support transactions between individuals. Typically, this type of E-Commerce works as Consumer to Business to Consumer (C2B2C).

It means that a consumer would contact a business in search for a suitable customer. Most of the auction websites and matrimonial websites are working on this methodology. For example, a consumer who wants to sell his property can post an advertisement on the website (eg: timesclassifieds.com). Another person who is interested in buying a property can browse the property, advertisement posted on this site. Thus, the two consumers can get in touch with each other for

sale/purchase of property through another business' website. **(Figure refer in book)**

6. **Consumer to Government (C2G):**
   Citizens as Consumers and Government engage in C2G E-Commerce. Here an individual consumer interacts with the Government. C2G models usually include income tax or house tax payments, fees for issuance of certificates or other documents. People paying for renewal of license online may also fall under this category.
7. **Government to Business (G2B):**
   G2B is closely related to B2G. G2B in E-Commerce refers to a business model where Government providing services or information to business organization. It may be a formal offer such as a takeover bid for a road project.

G2B is a part of e-govemance. The Government provides information about business rules, requirement and permission needed for starting a new business, and other specifications in its portal. The objective of G2B is to reduce burdens on business, provide one-stop access to information thereby boost the economy.

8. **Government to Consumer (G2C):**
   G2C in E-Commerce is very similar to C2G. Here the Government provides platform for its citizens to avail its services and information through th Internet. The services may be issuance of certificates through online. e.g. https://csc.gov.in/governmenttocitizen.

**9. Government to Government (G2G):**

G2G is the online (usually non-commercial) interaction between Government organizations or departments. G2G's principle objective is to implement e-governance rather commerce. G2G model in e-governance involves distributing data or information between its agencies/ departments. G2G systems can be classified into two types

Internal facing or local level – joining up a single Government's bureaucracies, e.g. https:// www.nic.in/

External facing or international level – joining up multiple Governments' bureaucracy.

**4. How would you differentiate a traditional commerce and E-Commerce?**

**Traditional vs E-Commerce:**

**Traditional Commerce:**

1. Traditional commerce is buying or selling of products and services physically.
2. Customer can easily identify, authenticate and talk to the merchant.
3. Physical stores are not feasible to be open all the time.

4. Products can be inspected physically before purchase.
5. Scope of business is limited to particular area.
6. Resources focus Supply side.
7. Business Relationship is Linear.
8. Marketing is one way marketing.
9. Payment is made by cash, cheque, cards etc.
10. Most goods are delivered instantly.

**E-Commerce:**

1. E-Commerce carries out commercial transactions electronically on the Internet.
2. Neither customer nor merchant see the other.
3. It is always available on all time and all days of the year.
4. Products can't be inspected physically before purchase. .
5. Scope of business is global. Vendors can expand their business Worldwide.
6. Resource focuses Demand side.
7. Business Relationship is End-to-end.
8. One-to-one marketing.
9. Payment system is mostly credit card and through fund transfer.
10. It takes time to transport goods.

**5. What are the advantages and disadvantages of E-Commerce to a consumer? Refer book Page no: 215**

**Advantages and Disadvantages of E-Commerce:**

The pros and cons of E-Commerce affect three **major stakeholders: consumers business organizations, and society.**

The following are the advantages and disadvantages of E-Commerce for a consumer.

**Advantages:**

1. E-Commerce system is operated on all days and all the day. It is able to conduct business 24 × 7. Neither consumer nor suppliers need physical store to be opened to do business electronically. People can interact with businesses at the time of their convenience.

# Chapter 16 Electronic Payment Systems

## II. Short Answers

**1.Define electronic payment system?**

The term electronic payment refers to a payment made from one bank account to another bank account using electronic methods forgoing the direct intervention of bank employees.

**2.Distinguish micro electronic payment** and macro electronic payment?

**Micro Electronic Payment System:**

1. Payments of small system amount
2. Less Security
3. Ex. Subscriptions of online games

**Macro Electronic Payment System:**

1. Payments of higher value
2. Highly Secured
3. Electronic account transfer

**3.List the types of micro electronic payments based on its algorithm?**

1. Hash chain based micro electronic payment systems.
2. Hash collisions and hash sequences based micro electronic payment systems.
3. Shared secrete keys based micro electronic payment systems.
4. Probability based micro electronic payment systems.

**4.Explain the concept of e-wallet?**

Electronic wallets (e-wallets) or electronic purses allow users to make electronic transactions quickly and securely over the Internet through smartphones or computers.

**5.What is a credit card network?**

Credit Card Network. A credit card issuer is the bank or NBFC that issues you the credit card. HDFC Bank, ICICI Bank, SBI Card are a few examples of credit card issuers in India. On the other hand, credit card networks act as the bridge between the card issuers and the merchants.

## PART – III

## III. Explain in Brief Answers

**1.Define micro electronic payment and its role in E-Commerce?**

1. It is an on-line payment system designed to allow efficient and frequent payments of small amounts.

2. In order to keep transaction costs very low, the communication and computational costs are minimized here.
3. The security of micro electronic payment systems is comparatively low
4. The majority of micro electronic payment systems were designed to pay for simple goods on the Internet, e.g., subscriptions of online games, read journals, listen to a song or watch a movie online etc.

**2.Compare and contrast the credit card and debit card?**

**Credit Card:**

A credit card is different from a debit card where the credit card issuer lends money to customer instead of deducting it from customer's bank account instantly.

**Debit Card:**

Credit card is an electronic payment system normally used for retail transactions. A credit card enables the bearer to buy goods or services from a vendor, based on the cardholder's promise to the card issuer to payback the value later with an agreed interest.

**3.Explain briefly Anatomy of a credit card?**

**Publisher:**

Emblem of the issuing bank

Credit card number:

The modem credit card number has 16-digit unique identification number.

4**.Briefly explain the stored value card and its types?**

(i) Closed loop (single purpose):

In closed loop cards, money is metaphorically stored on the card in the form of binary- coded data. e.g. Chennai metro rail travel card.

(ii) Open loop (multipurpose):

It is also called as prepaid-debit cards, e.g. Visa gift cards.

5. **What is electronic fund transfer?**

Electronic Fund Transfer (EFT) is **an RBI-backed Electronic Payment System**. EFT enables the transfer of money via electronic mediums, reducing the dependence on cash or Cheque transfers. Your fund transfer request goes through several entities before reaching the beneficiary

**PART – IV**

**IV. Explain in detail**

**1.What is credit card? Explain the key players of a credit card payment system and bring out the merits of it?**

**Credit Card:**

Credit card is an electronic payment system normally used for retail transactions. A

credit card enables the bearer to buy goods or services from a vendor, based on the cardholder's promise to the card issuer to payback the value later with an agreed interest. Every credit card account has a purchase limit set by the issuing bank or the firm. A credit card is different from a debit card where the credit card issuer lends money to customer instead of deducting it from customer's bank account instantly.

The term credit card was first mentioned in 1887 in the sci-fi novel "Looking Backward" by Edward Bellamy. The modem credit cards concept was bom in the U.S.A, in the 1920s, when private companies began to issue cards to enable their customers to purchase goods on credit within their own premises.

**Advantages of credit card:**

1. Most credit cards are accepted worldwide.
2. It is not necessary to pay physical money at the time of purchase. The customer gets an extra period to pay the purchase.
3. Depending on the card, there is no need to pay annuity.
4. Allows purchases over the Internet in installments.
5. Some issuers allows "round up" the purchase price and pay the difference in cash to make the transactions easy.

**Key players in operations of credit card:**

**1. Bearer:**

The holder of the credit card account who is responsible for payment of invoices in full (transactor) or a portion of the balance (revolver) the rest accrues interest and carried forward.

**2. Merchant:**

Storekeeper or vendor who sell or providing service, receiving payment made by its customers through the credit card.

**3. Acquirer:**

Merchant's bank that is responsible for receiving payment on behalf of merchant send authorization requests to the issuing bank through the appropriate channels.

4**. Credit Card Network:**

It acts as the intermediate between the banks. The Company responsible for communicating the transaction between the acquirer and the credit card issuer. These entities operate

the networks that process credit card payments worldwide and levy interchange fees. E.g. Visa, MasterCard, Rupay

**5. Issuer:**

Bearer's bank, that issue the credit card, set limit of purchases, decides the

approval – of transactions, issue invoices for payment, charges the holders in case of default and offer card-linked products such as insurance, additional cards and rewards plan.

**2.Briefly explain Electronic Account transfer and its types?**

With the advent of computers, network technologies and electronic communications a large number of alternative electronic payment systems have emerged. These include ECS (Electronic Clearing Services), EFT (Electronic funds transfers), Real Time Gross Settlement system (RTGS) etc.

**1. Electronic Clearing Services (ECS):**

Electronic Clearing Service can be defined as repeated transfer of funds from one bank account to multiple bank accounts or vice versa using computer and Internet technology. Advantages of this system are bulk payments, guaranteed payments and no need to remember payment dates. ECS can be used for both credit and debit purposes i.e. for making bulk payments or bulk collection of amounts.

**2. ECS credit:**

ECS credit is used for making bulk payment of amounts. In this mode, a single account is debited and multiple accounts are credited. This type of transactions are Push transactions. Example: if a company has to pay salary to its 100 employees it can use ECS credit system than crediting every employees' account separately.

**3. ECS debit:**

ECS debit is an inverse of ECS credit. It is used for bulk collection of amounts. In this mode, multiple accounts are debited and then a single account is credited. This type of transactions are Pull transactions. Example: The insurance premium of bulk number of customers

**4. Electronic Funds Transfer:**

Electronic Funds Transfer (EFT) is the "electronic transfer" of money over an online network. The amount sent from the sender's bank branch is credited to the receiver's bank branch on the same day in batches.

**5. Real Time Gross Settlement:**

Real Time Gross Settlement system (RTGS) is a payment system particularly used for the settlement of transactions between financial institutions, especially banks. Real-time gross settlement transactions are:

1. Unconditional – the beneficiary will receive funds regardless of whether he 242 fulfills his obligations to the buyer or whether he would deliver the goods or perform a service of a quality consistent with the order.

2. Irrevocable – a correctly processed transaction cannot be reversed and its money cannot get refunded (the so-called settlement finality).

**3.Write a note on : (a) Internet banking(b) Mobile banking**

**(a) Internet banking:**

Internet banking is a collective term for E-banking, online banking, virtual banking (operates only on the Internet with no physical branches), direct banks, web banking and remote banking. Internet banking allows customers of a financial institution to conduct various financial transactions on a secure website operated by the banking institutions. This is a very fast and convenient way of performing any banking transactions.

It enables customers of a bank to conduct a wide range of financial transactions through its website. In fact, it is like a branch exclusively operating of an individual customer. The online banking system will typically connect to the core banking system operated by customers themselves (Self-service banking).

**Advantages:**

1. The advantages of Internet banking are that the payments are made at the convenience of the account holder and are secured by user name and password, i.e. with Internet access it can be used from anywhere in the world and at any time.
2. Any standard browser (e.g. Google Chrome) is adequate. Internet banking does not need .installing any additional software.

**(b) Mobile banking:**

Mobile banking is another form of net banking. The term mobile banking (also called m-banking) refers to the services provided by the bank to the customer to conduct banking transactions with the aid of mobile phones. These transactions include balance checking, account transfers, payments, purchases, etc.

Transactions can be done at anytime and anywhere. The WAP protocol installed on a mobile phone qualifies the device through an appropriate application for mobile session establishment with the bank's website. In this way, the user has the option of permanent control over the account and remote management of his own finances. Mobile Banking operations can be implemented in the following ways:

- Contacting the call center.
- Automatic IVR telephone service.
- Using a mobile phone via SMS.
- WAP technology.
- Using smartphone applications.

3. Write about smard card and type.

**4.Write about Smart Card and type.**

**Smart card:**

The modem version of card based payment is smart cards. Smart cards along with the regular features of any card based payment system holds a EMV chip.

This chip is similar to well-known sim card in appearance but differ in its functionalities. The advantage of Smart cards is that it can provide identification, authentication, data storage and application processing. Smart cards can be classified into Contact smart cards and Contactless smart, Contact Smart card & POS cards.

**(Refer book figure 16.5)**

**(i) Contact smart cards:**

Contact smart cards have a contact area of approximately 1 square centimeter, comprising several gold – plated contact pads. These pads provide electrical connectivity only when inserted into a reader, which is also used as a communications medium between the smart card and a host. e.g. a point of sale terminal(POS).

**(ii) Contactless smart cards:**

Contactless smart card is empowered by RF induction technology. Unlike contact smart cards, these cards require only near proximity to an antenna to communicate. Smart cards, whether they are contact or contactless cards do not have an internal power source. Instead, they use an inductor to capture some of the interrupting radio-frequency signal, rectify it and power the card's processes.

**5.Explain in detail: Unified payments interface?**

(i) Unified Payments Interface (UPI) is a real-time payment system developed by National Payments Corporation of India (NCPI) to facilitate inter-bank transactions.

(ii) It is simple, secure and instant payment facility. This interface is regulated by the Reserve Bank of India and used for transferring funds instantly between two bank accounts through mobile (platform) devices. http://www. npci.org.in/

(iii) Unlike traditional e-wallets, which take a specified amount of money from user and store it in its own account, UPI withdraws and deposits funds directly from the bank account whenever a transaction is requested.

(iv) It also provides the "peer to peer" collect request which can be scheduled and paid as per requirement and convenience.

(v) UPI is developed on the basis of Immediate Payment Service (IMPS). To initiate a transaction, UPI applications use two types of address – global and local.

- Global address includes bank account numbers and IFSC.
- Local address is a virtual payment address.

(vi) Virtual payment address (VPA) also called as UPI-ID, is a unique ID similar to email id
(e.g. name@bankname) enable us to send and receive money from multiple banks and prepaid payment issuers.
(vii) Bank or the financial institution allows the customer to generate VPA using phone number associated with Aadhaar number and bank account number. VPA replaces bank account details thereby completely hides critical information.

(Viii) The MPIN (Mobile banking Personal Identification number) is required to confirm each payment. UPI allows operating multiple bank accounts in a single mobile application.
(ix) Some UPI application also allows customers to initiate the transaction using only Aadhaar number in absence VPA.

**Advantages:**

1. Immediate money transfers through mobile device round the clock 24 × 7.
2. Can use single mobile application for accessing multiple bank accounts.
3. Single Click Authentication for transferring of fund.
4. It is not required to enter the details such as Card no, Account number, IFSC etc. for every transaction.
5. Electronic payments will become much easier without requiring a digital wallet or credit or debit card.

## Chapter 17 E-Commerce Security Systems

**II. Short Answers**

1**.Write about information leakage in E-Commerce?**

**(i) Information leakage:**

The leakage of trade secrets in E-Commerce mainly includes two aspects:

1. The content of the transaction between the vendor and customer is stolen by the third party;
2. The documents provided by the merchant to the customer or vice versa are illegally used by the another. This intercepting and stealing of online documents is called information leakage.

**2.Write a short note on typo piracy?**

**Typo piracy:**

- Typo piracy is a variant of Cyber Squatting. Some fake websites try to take advantage of users' common typographical errors in typing a website address and direct users to a different website.
- Such people try to take advantage of some popular websites to generate accidental traffic for their websites, e.g. www.goggle.com,www.faceblook.com

**3.Define non-repudiation?**

Non-repudiation: prevention against violation agreement after the deal.

**4.List the different types of security technologies in E-Commerce?**

1. Encryption technology is an effective information security protection.
2. It is defined as converting a Plaintext into meaningless Ciphertext using encryption algorithm thus ensuring the confidentiality of the data.
3. The encryption or decryption process use a key to encrypt or decrypt the data.

**5.Write about digital signature?**

1. A digital signature is a mechanism that is used to verify that a particular digital document, message or transaction is authentic.
2. Digital signatures are used to verify the trustworthiness of the data being sent.

**PART – III**

**III. Explain in Brief Answer**

1.**Write a note on certification authorities (CA)?**

Digital certificates are issued by recognized Certification Authorities (CA). When someone requests a digital certificate, the authority verifies the identity of the requester, and if the requester fulfills all requirements, the authority issues it. When the sender uses a certificate to sign a document digitally, receiver can trust the digital signature because he trusts that CA has done their part verifying the sender's identity.

**2.List some E-Commerce Security Threats?**

1. Information leakage
2. Tampering
3. Payment frauds
4. Malicious code threats
5. Distributed Denial of Service (DDoS) Attacks
6. Cyber Squatting
7. Typopiracy

**3.Differentiate asymmetric and symmetric algorithms?**

**Symmetric Key Encryption:**

1. Same key is used for both encryption and decryption
2. Speed of encryption or decryption is very fast
3. Plain text and cipher text are of same size
4. Algorithms like DES, AES, RC4 uses symmetric key encryption
5. Provides confidentiality
6. The number of key used grows exponentially with the number of users

**Asymmetric Key Encryption:**

1. Different keys are used for encryption and decryption
2. Speed of encryption or decryption is comparatively slow
3. The size of cipher text is always greater than plain text.
4. Algorithms like RSA, ECC, DSA use asymmetric key encryption
5. Provides confidentiality, authenticity and ‘ non-repudiation
6. The number of key used grows linearly with the number of users

**4.Write a note on PGP?**

Pretty Good Privacy (PGP): Phil Zimmermann developed PGP in 1991. It is a decentralized encryption program that provides cryptographic privacy and authentication for data communication. PGP encryption uses a serial combination of hashing, data compression, symmetric-key cryptography and asymmetric-key cryptography and works on the concept of “web of trust”.

**5.Explain 3D secure payment protocols?**

3-D Secure is a secure payment protocol on the Internet. It was developed by Visa to increase the level of transaction security, and it has been adapted by MasterCard. It gives a better authentication of the holder of the payment card, during purchases made on websites. The basic concept of this (XML-based) protocol is to link the financial authorization process with an online authentication system. This authentication model comprise 3 domains (hence the name 3D) which are:

1. The Acquirer Domain
2. The Issuer Domain
3. The interoperability Domain.

**PART – IV**

**IV. Explain in detail**

1.**Write about dimensions of E-Commerce Security?**

The following are some of the security elements involved in E-Commerce:

1. Authenticity: conforming genuineness of data shared.

2. Availability: prevention against data delay or removal.
3. Completeness: unification of all business information.
4. Confidentiality: protecting data against unauthorized disclosure.
5. Effectiveness: effective handling of hardware, software and data.
6. Integrity: prevention of the data being unaltered or modified.
7. Non-repudiation: prevention against violation agreement after the deal.
8. Privacy: prevention of customers' personal data being used by others.
9. Reliability: providing a reliable identification of the individuals or businesses.
10. Review ability: capability of monitoring activities to audit and track the operations.

**2.Explain encryption technology?**

**Encryption technology:**

Encryption technology is an effective information security protection. It is defined as converting a Plaintext into meaningless Cipher text using encryption algorithm thus ensuring the confidentiality of the data. The encryption or decryption process use a key to encrypt or decrypt the data. At present, two encryption technologies are widely used. They are symmetric key encryption system and an asymmetric key encryption system.

**Symmetric key encryption:**

The Data Encryption Standard (DES) is a Symmetric key data encryption method. It was introduced in America in the year 1976, by Federal Information Processing Standard (FIPS).

DES is the typical block algorithm that takes a string of bits of clear text (plaintext) with a fixed length and, through a series of complicated operations, transforms it into another encrypted text of the same length. DES also uses a key to customize the transformation, so that, in theory, the algorithm can only be deciphered by people who know the exact key that has been used for encryption. The DES key is apparently 64 bits, but in fact the algorithm uses only 56. The other eight bits are only used to verify the parity and then it is discarded.

Today, it is considered that DES is not safe for many applications, mainly because of its relatively smaller key size (56-bit). But the key length can be easily increased by multiple use of the DES, described as Triple-DES, also known as TDES, 3DES or DESede.

**Asymmetric or Public key encryption:**

Asymmetric encryption also called as RSA (Rivest-Shamir-Adleman) algorithm. It uses public- key authentication and digital signatures. Until 1970s, there were only

symmetric cryptosystems in which transmitter and receiver must have the same key. This raises the problem of key exchange and key management.

Unlike a symmetric encryption, the communicating parties need not know other's private- key in asymmetric encryption. Each user generates their own key pair, which consists of a private key and a public key. A public-key encryption method is a method for converting a plaintext with a public key into a cipher text from which the plaintext can be retrieved with a private key.

**3. Differentiate digital signatures and digital certificates?**

**Digital signature:**

1. A digital signature is a mechanism that is used to verify that a particular digital document, message or transaction is authentic.
2. Digital signatures are used to verify the trustworthiness of the data being sent
3. Digital signature is to ensure that a data remain secure from the point it was issued and it was not modified by a third party.
4. It provides authentication, non-repudiation and integrity
5. A digital signature is created using a Digital Signature Standard (DSS). It uses a SHA- 1 or SHA-2 algorithm for encrypting and decrypting the message.
6. The document is encrypted at the sending end and decrypted at the receiving end using asymmetric keys.

**Digital certificate:**

1. A digital certificate is a computer file which officially approves the relation between the holder of the certificate and a particular public key.
2. Digital certificates are used to verify the trustworthiness of the sender.
3. Digital certificate binds a digital signature to an entity
4. It provides authentication and security.
5. A digital certificate works on the principles , of public key cryptography standards (PKCS). It creates certificate in the X.509 or PGP format.
6. A digital certificate consist of certificate's owner name and public key, expiration date, a Certificate Authority 's name , a Certificate Authority's digital signature.

**4.Define Secure Electronic Transaction (SET) and its features?**

There are two kinds of security authentication protocols widely used in E-Commerce, namely Secure Electronic Transaction (SET) and Secure Sockets Layer (SSL).

**Secure Electronic Transaction**:

Secure Electronic Transaction (SET) is a security protocol for electronic payments

with credit cards, in particular via the Internet. SET was developed in 1996 by VISA and MasterCard, with the participation of GTE, IBM, Microsoft and Netscape.
The implementation of SET is based on the use of digital signatures and the encryption of transmitted data with asymmetric and symmetric encryption algorithms. SET also use dual signatures to ensure the privacy.
The SET purchase involves three major participants: the customer, the seller and the payment gateway. Here the customer shares the order information with the seller but not with the payment gateway. Also the customer shares the payment information only with the payment gateway but not with the seller.
So, with the SET, the credit card number may not be known to the seller and will not be stored in seller's files also could not be recovered by a hacker. The SET protocol guarantees the security of online shopping using credit cards on the open network. It has the advantages of ensuring the integrity of transaction data and the non-repudiation of transactions. Therefore, it has become the internationally recognized standard for credit card online transaction.

**SET system incorporates the following key features:**

- Using public key encryption and private key encryption ensure data confidentiality.
- Use information digest technology to ensure the integrity of information.
- Dual signature technology to ensure the identity of both parties in the transaction.

**5.Briefly explain SSL?**

**Secure Sockets Layers:**

The most common Cryptographic protocol is Secure Sockets Layers (SSL). SSL is a hybrid encryption protocol for securing transactions over the Internet. **The SSL standard was developed by Netscape in collaboration with MasterCard, Bank of America, MCI and Silicon Graphics.**

- It is based on a public key cryptography process to ensure the security of data transmission over the internet. Its principle is to establish a secure communication channel (encrypted) between a client and a server after an authentication step.
- The SSL system acts as an additional layer, to ensure the security of data, located between the application layer and the transport layer in TCP.
- For example, a user using an internet browser to connect to an SSL secured E-Commerce site will send encrypted data without any more necessary manipulations. Secure Sockets Layers (SSL) was renamed as Transport

Layer Security (TLS) in 2001. But still it is popularly known under the name SSL. TLS differs from SSL in the generation of symmetric keys.

- Today, all browsers in the market support SSL, and most of the secure communications are proceeded through this protocol. SSL works completely hidden for the user, who does not have to intervene in the protocol. The only thing the user has to do is make sure the URL starts with https:// instead of http:// where the “s” obviously means secured. It is also preceded by a green padlock.

## Chapter 18 Electronic Data Interchange – EDI

**PART – II**

**II. Short Answer**

**1.Define EDI?**

The Electronic Data Interchange (EDI) is the exchange of business documents between one trade partner and another electronically. It is transferred through a dedicated channel or – through the Internet in a predefined format without much human intervention.

**2.List few types of business documents that are transmitted through EDI?**

1. Direct EDI EDI via VAN
2. EDI via FTP/VPN, SFTP, FTPS
3. Web EDI
4. Mobile EDI

**3.What are the 4 major components of EDI?**

There are four major components of EDI. They are:

1. Standard document format
2. Translator and Mapper
3. Communication software
4. Communication network

4**. What is meant by directories in EDIFACT?**

The versions of EDIFACT are also called as directories. These EDIFACT directories will be revised twice a year; on 1 st April and 1 st October to include new or update, existing EDIFACT messages. EDIFACT directories have names like D. 18B (D stands for Directory, 18 is the year and A/B indicates the month of release)

**5. Write a note on EDIFACT subsets?**

Due to the complexity, branch-specific subsets of EDIFACT have developed. These

subsets of EDIFACT include only the functions relevant to specific user groups.

**Example:**

- CEFIC – Chemical industry
- EDIFURN – furniture industry
- EDIGAS – gas business

**PART – III**

**III. Explain in Brief Answer**

**1. Write a short note on EDI?**

2. The Electronic Data Interchange (EDI) is the exchange of business documents between one trade partner and another electronically.
3. It is transferred through a dedicated channel or through the Internet in a predefined format without much human intervention.
4. It is used to transfer documents such as delivery notes, invoices, purchase orders, advance ship notice, functional acknowledgements etc.
5. These documents are transferred directly from the computer of the issuing company to that of the receiving company, with great time saving and avoiding many errors of traditional “on paper” communications.

**2. List the various layers of EDI?**

Electronic data interchange architecture specifies four different layers namely –

1. Semantic layer
2. Standards translation layer
3. Transport layer
4. Physical layer

These EDI layers describes how data flows from one computer to another. **(Refer in book figure 18.3)**

**3. Write a note on UN/EDIFACT?**

- United Nations / Electronic Data Interchange for Administration, Commerce and Transport
- (UN / EDIFACT) is an international EDI – standard developed under the supervision of the United Nations.
- In 1987, the UN / EDIFACT syntax rules were approved as ISO: IS09735 standard by the International Organization for Standardization.
- EDIFACT includes a set of internationally agreed standards, catalogs and guidelines for electronic exchange of structured data between independent computer systems.

**4.Write a note on EDIFACT message?**

The basic standardization concept of EDIFACT is that there are uniform message

types called United Nations Standard Message (UNSM). In so-called subsets, the message types can be specified deeper in their, characteristics depending on the sector. The message types, all of which always have exactly one nickname consisting of six uppercase English alphabets. The message begins with UNH and ends with UNT.

**Service messages**

To confirm / reject a message, CONTRL and APERAK messages are sent.

1. CONTRL – Syntax Check and Confirmation of Arrival of Message
2. APERAK – Technical error messages and acknowledgment
3. Data exchange
4. CREMUL – multiple credit advice
5. DELFOR-Delivery forecast
6. IFTMBC – Booking confirmation

**5.Write about EDIFACT separators?**

**EDI Separators:**

EDIFACT has the following punctuation marks that are used as standard separators.

**Character:**

1. Apostrophe
2. Plus sign +
3. Colon:
4. Question mark?
5. Period

**Uses:**

1. Segment terminator
2. Segment tag and data element separator
3. Component data element separator
4. Release character
5. Decimal point

**IV. Explain in detail**

**1.Briefly explain various types of EDI?**

The types of EDI were constructed based on how EDI communication connections and the conversion were organized. Thus based on the medium used for transmitting EDI documents the following are the major EDI types.

1. Direct EDI
2. EDI via VAN
3. EDI via-FTP/VPN, SFTP, FTPS

4. Web EDI
5. Mobile EDI
6. Direct EDI/Point-to-Point

It is also called as Point-to-Point EDI. It establishes a direct connection between various business stakeholders and partners individually. This type of EDI suits to larger businesses with a lot of day to day business transactions.

**DI via VAN:**

EDI via VAN (Value Added Network) is where EDI documents are transferred with the support of third party network service providers. Many businesses prefer this network model to protect them from the updating ongoing complexities of network technologies.

**DI via FTP/VPN, SFTP, FTPS**:

When protocols like FTP/VPN, SFTP and FTPS are used for exchange of EDI based documents through the Internet or Intranet it is called as EDI via FTP/VPN, SFTP, FTPS.

**Web EDI:**

Web based EDI conducts EDI using an web browser via the Internet. Here the businesses are allowed to use any browser to transfer data to their business partners. Web based EDI is easy and convenient for small and medium organizations.

Mobile EDI:

When smartphones or other such handheld devices are used to transfer EDI documents it is called as mobile EDI. Mobile EDI applications considerably increase the speed of EDI transactions.

**2.What are the advantages of EDI?**

**Advantages of EDI:**

EDI was developed to solve the problems inherent in paper-based transaction processing and in other forms of electronic communication. Implementing EDI system offers a company greater control over its supply chain and allow it to trade more effectively. It also increases productivity and promotes operational efficiency.

**The following are the other advantages of EDI.**

1. Improving service to end users
2. Increasing productivity
3. Minimizing errors
4. Slashing response times
5. Automation of operations
6. Cutting costs

7. Integrating all business and trading partners
8. Providing information on process Status
9. Optimizing financial ratios

**DI Layers:**

Electronic data interchange architecture specifies four different layers namely;

1. Semantic layer
2. Standards translation layer
3. Transport layer
4. Physical layer

These EDI layers describes how data flows from one computer to another.

3.**Write about structure of EDIFACT?**

**EDIFACT Structure:**

EDIFACT is a hierarchical structure where the top level is referred to as an interchange, and lower levels contain multiple messages. The messages consist of segments, which in turn consist of composites. The final iteration is a data element.

segment Tables: **(Refer in book figure 18.6 structure compulsory)**

Segment table lists the message tags. It contains the tags, tag names, requirements designator and repetition field. The requirement designator may be mandatory (M) or conditional (C). The (M) denotes that the segment must appear at least once. The (C) denotes that the segment may be used if needed. e.g. C10 indicates repetitions of a segment or group between 0 and 10.