Q.1 – Explain GIRO, RTGS, NEFT payment system

GIRO

GIRO was set up in 1987 as an electronic direct debit mechanism used by billing organisations (BOs) as a low cost means to collect payments. GIRO ia a tripartite mechansim between billing organisations, customers and the bank. The authorization for direct debit is a contractual relationship between a consumer and a BO; banks are the intermediaries in this tripartite relationship and help to effect authorised GIRO deductions. Today, GIRO is widely used for consumers to pay bills to government agencies and private sector BOs. GIRO is especially useful for payments which are regular in nature and of a fixed quantum.

GIRO is the short form of General Interbank Recurring Order. You can set up a GIRO arrangement by requesting for your bank to make on time payment to the billing organization by the due date.

GIRO is a convenient mode of payment for all regular bill payments like telephone bills, income tax, utility bills, season parking fees, credit card bills and many more. No more worries about missing a payment, paying penalty fees or waiting in line to make payment. Simply maintain sufficient funds in the designated DBS/POSB bank account(s) for deduction on the payment dates.

GIRO Application via iBanking

1. Select "Payments", "GIRO: Manage GIRO Arrangements" and “Add GIRO Arrangement”.
2. Under "From Account", choose your preferred account for this payment.
3. Under "To Billing Organisation", select the name of the Billing Organisation.
4. Under "Bill Reference No.", please key in your bill reference number for the Billing Organisation. For the explanatory guide on "Bill Reference No", please click "View More Info".
5. Under "Payment Limit", please key in "0" unless you would like to set a limit.
6. Click "Submit".
7. Check your information again before you click "Confirm" and your application is complete!

RTGS

Real-time gross settlement systems (RTGS) are specialist funds transfer systems where transfer of money or securities takes place from one bank to another on a "real time" and on "gross" basis. Settlement in "real time" means payment transaction is not subjected to any waiting period. The transactions are settled as soon as they are processed. "Gross settlement" means the transaction is settled on one to one basis without bundling or netting with any other transaction. Once processed, payments are final and irrevocable.

RTGS systems are typically used for high-value transactions that require immediate clearing. In some countries the RTGS systems may be the only way to get same day cleared funds and so may be used when payments need to be settled urgently. However, most regular payments would not use a

RTGS system, but instead would use a national payment system or network that allows participants to batch and net payments.

RTGS systems are usually operated by a country's central bank as it is seen as a critical infrastructure for a country's economy. Economists believe that an efficient national payment system reduces the cost of exchanging goods and services, and is indispensable to the functioning of the interbank, money, and capital markets. A weak payment system may severely drag on the stability and developmental capacity of a national economy; its failures can result in inefficient use of financial resources, inequitable risk-sharing among agents, actual losses for participants, and loss of confidence in the financial system and in the very use of money.

NEFT

NEFT stands for National Electronic Funds Transfer. Started in November 2005, NEFT is an electronic funds transfer system set up and managed by the Reserve Bank of India. NEFT allows the online transfer of funds from one NEFT-enabled bank account to another.

Features

The National Electronic Funds Transfer system is one of the various methods of online money transfer. It is regulated by the RBI and hence, works as per the guidelines laid down by RBI.

- NEFT is a one-to-one payment facility
- NEFT transactions can be processed only between the banks that offer NEFT-enabled services
- Transactions made through NEFT do not take place in real-time; implying that it takes a few days for NEFT transactions to complete
- Before December 2019, RBI had fixed timings during which NEFT transactions can be processed. Any NEFT transaction will be processed only between 8:00 AM and 6:30 PM from Monday to Friday, and 8:00 AM to 12:00 PM on Saturdays. However, from 2020, NEFT transactions can be performed 24*7
- To transfer funds through NEFT, you must add beneficiaries on the internet banking portal of your required bank
- There are no limits on the amount of NEFT transactions
- There is a fee applicable on all NEFT transactions; the amount varies from Rs. 2.5 to Rs. 25, depending on the amount being transferred
- As per RBI guidelines, the payments made via NEFT are processed and settled in batches of half-hour

Advantages

Among all the other methods of online money transfer, here's why you can opt for NEFT (National Electronic Funds Transfer)-

- NEFT makes the transfer of funds easy, convenient and feasible
- All NEFT transactions take place online; hence, there is no involvement of a third party
- Owing to the involvement of RBI, NEFT transactions are completely safe and secure
- The receiver and sender of the funds gets notified instantly upon completion of the transaction
- NEFT does not require cheques or demand drafts while transferring money; hence, it is economical
- Any account holder, whether an individual, firm or corporate can carry out NEFT transactions. The only required condition is that the banks of both the parties must be NEFT-enabled
- Apart from transferring money, you can also use NEFT to pay your loan installments, credit card dues, EMIs, etc.

Q.2 – Explain Cryptography in detail

Cryptography in the context of e-commerce refers to the practice of using mathematical algorithms and protocols to secure online transactions and communications. The goal of cryptography in e-commerce is to protect sensitive information, such as credit card numbers, passwords, and personal data, from being intercepted or stolen by malicious actors.

Cryptographic techniques used in e-commerce include encryption, digital signatures, and authentication protocols, which help to ensure the confidentiality, integrity, and authenticity of online transactions. For example, encryption is used to encode sensitive information so that it cannot be read by anyone other than the intended recipient, while digital signatures are used to verify the authenticity of a message or transaction.

By using cryptography, e-commerce businesses and their customers can have confidence in the security of their online transactions and protect themselves from potential fraud and cyber threats. eCash is based on cryptographic systems called Digital Signatures. This method involves a pair of numeric keys (very large integers or numbers) that work in tandem: one for locking (or encoding) and the other for unlocking (decoding). Messages encoded with one numeric key can only be decoded with the other numeric key and none other. The encoding key is kept private and the decoding key is made public. By supplying all customers (buyers and sellers) with its public key, a bank enables customers to decode any message (or currency) encoded with the bank's private key. If decoding by a customer yields a recognizable message, the customer can be fairly confident that only the bank could have encoded it. These digital signatures are as secure as the mathematics involved and have proved Over the past two decades to be more resistant to forgery than handwritten signatures.
Before eCash can be used to buy products or services, it must be procured from a Currency server.

Suppose Alice and Bob wish to communicate securely — they may choose to use cryptography. Without ever having met Bob, Alice may need to obtain a key to use to encrypt messages to him. In this case, a TTP is a third party who may have previously seen Bob (in person), or is otherwise willing to vouch that this key (typically in an identity certificate) belongs to the person indicated in that certificate, in this case,

Bob. In discussions, this third person is often called Trent. Trent gives it to Alice, who then uses it to send secure messages to Bob. Alice can trust this key to be Bob's if she trusts Trent. In such discussions, it is simply assumed that she has valid reasons to do so (of course there is the issue of Alice and Bob being able to properly identify Trent as Trent and not someone impersonating Trent).

Q.3 – What is a Virus? Explain any 2 types in detail

In the context of e-commerce, a virus refers to a type of malicious software that infects a computer system and can cause harm to its data and functionality. These viruses can spread through various means, such as email attachments, links to infected websites, or through the download of contaminated software.

1. Trojan Virus

A Trojan virus in the context of e-commerce refers to a type of malicious software that is disguised as a harmless program but is designed to steal sensitive information such as login credentials, passwords, or credit card numbers. These viruses are often spread through email attachments, links to infected websites, or through the download of contaminated software.

Once a Trojan virus infects a computer system, it can run unnoticed in the background, collecting sensitive information and transmitting it to a remote attacker. This can cause significant harm to both e-commerce businesses and their customers by compromising sensitive information, disrupting online transactions, and undermining the overall trust in e-commerce as a secure platform.

To protect against Trojan viruses in e-commerce, it is important to implement effective security measures, such as using antivirus software, regularly updating software, and being cautious when opening emails or downloading files from unknown sources. By taking these precautions, e-commerce businesses and their customers can reduce the risk of falling victim to a Trojan virus attack.

2. Adware

Adware viruses in the context of e-commerce refer to a type of malicious software that displays unwanted advertisements on a computer system and collects personal information for the purpose of targeted advertising. These viruses are often spread through email attachments, links to infected websites, or through the download of contaminated software.

Once a computer system is infected with adware, it can slow down the performance of the computer, display unwanted advertisements, and collect sensitive information such as browsing habits and personal information. This can not only be annoying but can also put sensitive information at risk.

Q.4 – Describe any 2 schemes of E-governance in India

State Wide Area Network (SWAN)

Wide Area Network is an advanced telecommunication infrastructure, which is used now-a-days extensively, for exchange of data and other types of information between two or more locations, separated by significant geographical distances. The medium of connectivity can be copper, optical fibre cable or wireless, as may be found feasible. Such wide area networks, in a way, create a highway for electronic transfer of information in the form of voice, video and data. Department of IT in Government of India is implementing an approved Scheme known as State Wide Area Network (SWAN) Scheme, envisaged to create such a connectivity in each State / UT, to bring speed, efficiency, reliability and accountability in overall system of Government-to-Government (G2G) functioning. When fully implemented, SWAN would work as a converged backbone network for voice, video and data communications across each State / UT. SWAN is designed to cater to the governance information and communication requirements of all the State / UT Departments. When fully implemented, SWANs across the country are expected to cover at least 50000 departmental offices through 1 million (10 lacs) route kilometres of communication links. Department of IT obtained Government approval in March 2005, for the SWAN Scheme for an overall outlay of Rs. 3334 Crores. This outlay has a Grant In Aid component of Rs. 2005 Crores, to be expended by Department of IT in five years. The Scheme has a State / UT share of balance Rs.1329 crores, which has been provisioned by the Department of Expenditure, Govt. of India, under Additional Central Assistance (ACA).

The Software Technology Parks (STP) Scheme

It is a government-sponsored initiative aimed at promoting the growth and development of the software industry in India. The scheme provides a range of benefits and incentives to software companies, including tax holidays, subsidies, and access to state-of-the-art infrastructure.
Here are some key features of the STP Scheme:

- Tax benefits: Software companies located in STP-approved areas are eligible for tax holidays, exemptions from indirect taxes, and subsidies on power and water.
- Infrastructure support: STP parks provide state-of-the-art infrastructure and facilities, including high-speed internet connectivity, modern office space, and security services.

- Simplified procedures: The STP Scheme aims to simplify the process of setting up a software company by streamlining government procedures and reducing red tape.
- Access to a pool of talent: STP parks are often located in areas with a large pool of skilled IT professionals, providing software companies with access to a talented workforce.
- Encouragement of innovation: The STP Scheme encourages innovation and entrepreneurship by providing subsidies and other incentives to new software companies.

Some examples of successful software companies that have benefited from the STP Scheme include Tata Consultancy Services, Infosys, and Wipro. These companies have grown to become global leaders in the software industry and have played a significant role in transforming India into a major player in the global IT market.