

## THIRD SEMESTER THEORY EXAMINATION, 2010-11

### IT INFRASTRUCTURE AND ITS MANAGEMENT

Time: 3 Hours

Total Marks: 100

Note: (i) Attempt all questions.

1. Attempt any four parts of the following:

(5×4=20)

**Q.1. (a) Explain the importance of IT infrastructure management activity.**

Ans. IT infrastructure management is quite simply the management of all the operations of various IT infrastructures to ensure the smooth running of an enterprise.

- Success of an enterprise relies quite heavily on the proper function of its inherent IT infrastructure services as they want to get the best out of infrastructure.
- Critical decisions often depend on this infrastructure and its smooth functioning is very crucial.
- Others choose these activities as they prefer a vendor managing their infrastructure and also because they want someone who can handle the job of data security as well.
- It can provide and offer enterprises varied benefits and advantages.
- IT infrastructure can take quite a load off enterprises, when it concerns the optimum functioning of IT infrastructure and systems.

**Q.1. (b) What is software piracy and how it can be avoided?**

Ans. Software piracy can be defined as copying and using commercial software purchased by some else. It is illegal. Each pirated piece of software takes away from company profits, reducing funds.

It is the unauthorized copying of software. Most retail programs are licensed for user at just one computer site or only by 1 user.

There are several ways to secure the application to avoid software piracy:

1. Automate key creation of serial numbers i.e., using distinct numbers based on the computer on which the software is installed creates a unique key which can't be used on another one.
2. Requires software authentication and activation over an internet connection.
3. Incorporate flexible licencing using software, freeware and corporate versions of the software.
4. Generate a serial number during the online shopping process.

**Q.1. (c) Describe briefly the Internet development.**

Ans. Although the history of the internet begins in 19th century with invention of telegraph system. The modern history begins in 1950's and 1960's with the development of computers.

- Point to point communication between mainframe computers and terminals, expanded to point to point connections between computer in late 60's using a variety of protocols.
- Packet switched networks such as ARPANET, were developed in 1960's. ARPANET led to the development of protocols for internetworking where multiple separate methods could be joined together into network of network.
- In 1982, Internet protocol suite (TCP/IP) was standardized and the concept of world wide network of fully interconnected TCP/IP network called Internet was introduced.
- Since mid 1990's the internet has had a drastic impact on culture and commerce, including the rise of near instant communication by

electronic mail, text based discussion forums, and the world wide web.

**Q.1. (d) Describe the goals of IT service management process.**

**Ans.** The goals are:

- (i) Cost reduction in provision of services
- (ii) Improved customer care
- (iii) Rapid introduction of new services

• **Approaches :**

- (a) Improve process flow across service provider systems and amongst providers.
- (b) Direct customer management.
- (c) Greater re-use of software components.
  - >> Plan phase
  - >> Deliver phase
  - >> Operate phase

} Life cycle

To ensure that the work done in each phase of the IT service lifecycle meets its key objects, MOF identifies internal controls to minimize the risks to those objectives. Controls are processes & procedures put in place in each phase to ensure that the tasks are performed as expected and that the management objectives can be achieved.

**Q.1. (e). Describe the services provided by cloud computing.**

**Ans.**

- **Infrastructure as a service:** Amazon web services can be provided as example where the users application interface access the virtual servers and storeys hosted by Amazon to read books online.
- **Platform as a service :** Platform is a set of application or s/w which runs on platform which is hosted in the cloud.
- **Software as a service :** In s/w as a service model provides both h/w & s/w infrastructure and provides a front end for the users to interact with the system front the through end portal.
- **Hybrid cloud :** Here a part of the infrastructure is hosted inside the organization and the other point is hosted in a public cloud.
- **Inter cloud :** It is the interconnection of clouds where there are no enough resources in a particular cloud. However, there are

complexity like billing, QOS interoperability, security.

**Q.1. (f) Describe five popular applications of Internet.**

**Ans.** Since the internet has become popular its being used for many purposes:

- (i) **Email:** We can communicate in a few of seconds with a person who is sitting in the other part of the world globally connected.
- (ii) **Information:** The biggest advantage that e offering is information. The e and www have made it easy for anyone to access information and it can be of any type, as e is flooded with information.
- (iii) **Business:** World trade has seen a big boom with the help of the e as it has become easier for buyers and sellers.
- (iv) **Social networking:** Online community with almost all users are its members use it for personal and business purpose.
- (v) **Shopping and entertainment:** Online shopping provides the use of e to buy anything and everything. People also use e to auction goods. It also provides for watching movies, gaming online etc.

**2. Attempt any four parts of the followings:**

(5×4=20)

**Q.2. (a) Write and describe two popular methods used for budget preparation.**

**Ans.** The following things should be kept in mind while preparation a budget.

1. Identify and set your tools
2. Select the tools you need
3. Prepare your budget for action
4. Needs and wants
5. Stick to your plans for the future

A budget should not be constricting—unless you are in over your head. Update the budget when changes in your life affect your needs and wants.

As changes in income occur, your budget should change too. Pay off credit and personal loans so you can start to build a retirement income and set up some disaster insurance. If you follow these steps your budget will be solid and good in shape.

**Q.2. (b) Explain the following in short:**

- (i) Service level management

**Ans. (i)** Service level management is the monitoring and management of the quality of service (QOS) of an entity's key performance indicators (KPIS). The key performance indicators range from coarse grained availability and usage statistics to fine-grained entity-constant per interaction indicators. Service level management involves comparing actual performance with pre-defined expectations, determining opposite actions and producing meaningful reports.

**(ii) Service level objectives:** Service level objectives (SLO's) are a key element of a service level agreement (SLA) between a service provider and a customer. SLOs are good as a means of measuring the performance of service provider and are outlined as a way of avoiding disputes between two parties based on misunderstanding. The SLO may be composed of one or more quality of service requirements.

**Q.2. (c) How the service level agreement helps the service level management process? Explain in brief.**

**Ans.** A service level agreement enables an organization to be assured of a defined amount of stability, reliability and performance for a provided IT infrastructure. A service level agreement may complement or be a part of policy based service level management, service level management means that potential problems can be identified (Such of graded performance degradation) and charts can be created thereby minimising the risk of down time.

Service level management provides a "comfort zone" about the quality of a given intra solution. Thus a service level agreement helps a service level management to maintain the quality of service of an entity's performance.

**Q.2 (f) How does OLA differ from the SLA? Explain in brief.**

**Ans.**

OLA	SLA
1. Operational level agreement is an agreement in respect to maintenance and offer services.	1. SLA focuses on service part of the agreement, like uptime of service and performance.
2. OLA is an agreement between the internal support groups of an institution that supports SLA.	2. The service level agreement is basically a contract between a service provider and customer.
3. They both have similar target groups.	3. They both have similar target groups.
4. It does not provide service to customers.	4. It provides service to customers.
5. It is more technical in nature.	5. It is less technical in nature.

**Q.2. (d) Describe the various documents generated by service level management.**

**Ans.** Service level management is the process that forms the link between the IT organizations and customers. Implementing it can only be successful when other ITL processes are implemented as well.

Following are the documents generated by a SLM:

1. Mission statement: Plan, coordinate, negotiate and manage the quality of IT service at acceptable cost.
2. Process goal
3. Critical success factors
4. Key activities
5. Key performance indicators
6. Service catalog
7. Service level agreement
8. Objective level agreement.

**Q.2. (e) Write and explain the advantages of financial management.**

**Ans.** In the words of Phileppetis financial management is concerned with the management of decisions that result in the acquisition and financing of long term assets for the firm. It deals with situations that require the selection of specific assets of combination of assets. Following are the advantages of financial management:

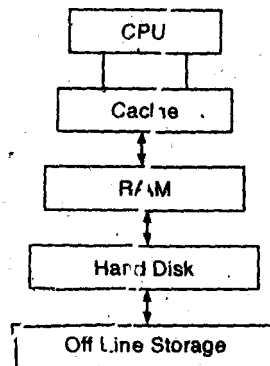
1. **Profit maximisation:** It increases the profit and makes it as high as possible.
2. **Feasibility:** It helps in studying the finances and suggests whether they are possible or not.
3. **Wealth maximisation:** It maximises wealth.
4. **Survival:** It makes sure that company survive.
5. **Non-interference:** No outside interference.
6. **Intensive use:** It makes use of all possible resources for maximum profit.

3. Attempt any two parts of the following :

(10×2=20)

Q.3. (a) Describe the storage hierarchy. What is the purpose to use the memories of different nature in computer system? Explain the storage management process and activities.

Ans. The storage hierarchy is as follows:



Different memories are used in computer system of different nature because of different kind of requirements. The memory varies from very small size, very fast memory (Cache memory) to large size comparatively slower memory (Hard disk etc.). There are three kinds of storage memory:

- (1) LM (local memory storage)
- (2) LCM (Loosely coupled memory storage)
- (3) DA (Distributed Archival story)

Following are the processes and activities involved in storage management:

**Disk scheduling:** It is the process of preparing the disk for scheduling and indexing.

**Algorithm selection:** In this the algo to be implemented is selected.

**Storage abstraction:**

Input /Output buffer management

Device independent I/O.

Q.3. (b) Define and classify the disasters. What is disaster recovery planning? Write and explain the steps to test the disaster recovery plan.

Ans. Disaster is a sudden calamitous event bringing great damage, loss and destruction and devastation to life and property. Following are the various types of disasters.

- (1) Major natural disaster : eg. flood, earthquake

- (2) Minor natural disaster : eg. cold wave
- (3) Major man-made disaster : eg. epidemic
- (4) Minor man-made disaster : eg. food poisoning.

A disaster recovery plan is a comprehensive statement of consistent actions to be taken before, during and after a disaster. The plan should be documented and tested to ensure the continuity of operations and availability of critical resources in the event of a disaster.

The steps to test a disaster recovery plan are as follows:

1. **Structured work through testing:** During this recovery team members meet through specific steps of each component of the disaster recovery process.
2. **Check list testing:** A check list test determines if sufficient supplies are stored at the backup site, telephone numbers listing are correct etc.
3. **Simulation testing:** During this test the organization simulates a disaster, so normal operations will not be interrupted.
4. **Parallel testing:** A parallel test may be performed in conjunction with a check list or a simulation test.
5. **Full interruption testing:** This activates the total disaster recovery plan.

Q.3. (c) What is release management? Describe the processes involved in release management.

Ans. Release management is a software engineering process intended to oversee the development, testing, deployment and support of software release. The practice of release management combines the general business emphasis of traditional project management with a detailed technical knowledge of the systems development lifecycle (SDLC) and IT infrastructure library (ITIL) practices. Release management usually begins in the development cycle with requests for changes or new features. If the request is approved, the new release is planned and designed.

Following is the process involved in release management:

1. Establishing a planning policy for the implementation of new versions.

2. Developing new versions or buying them from third party.
3. Testing new versions in an environment that simulates the live environment as closely as possible.
4. Validating the new versions.
5. Carrying out back-out plans to remove the new version if necessary.
6. Implementing new versions in live environment.
7. Informing and training customers and users about the functionality of the newly released version.

4. Attempt any two parts of the following:

(10×2=20)

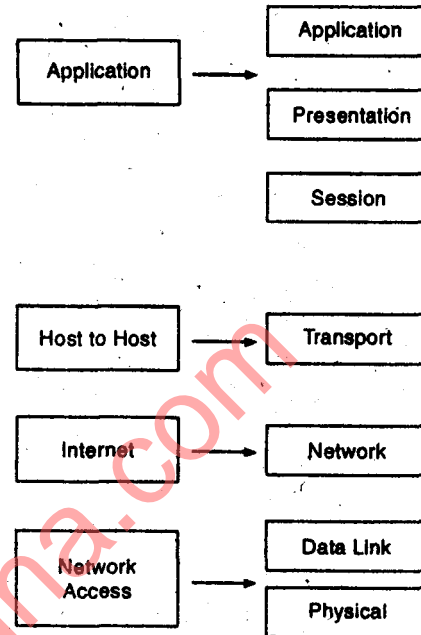
**Q.4. (a) Identify and describe the techniques which are used to secure data while transmitting over the internet, to save it from hackers and crackers.**

**Ans.** The different techniques are:

- (1) Identity and access management  
↳ includes sign up and register.
- (2) Encrypted login.
- (3) Security provided by network  
↳ like sonic wall and filter.
- (4) Light Weight Directory Access Protocol.
- (5) Firewall  
↳ block unwanted data
  - Proxy firewall
  - Application Gateway firewall
  - Circuit Gateway firewall

**Q.4. (b) Describe the TCP/IP reference model. What are the security devices and the techniques used for protecting TCP/IP five layer architecture models? Explain.**

**Ans.** The model is :



The protocols used are: Telnet, FTP, SMTP, DNS, TCP, UDP, IGMP, IP, IPSEC, etc., all these have inherent security.

**Q.4. (c) What are intruders? Write the main functions of intrusion detection. Write and describe the important types of intrusion detection systems.**

**Ans.** An intruder is any un-authorised person or persons that try to access a secure network or machine without sufficient permission. They try to gain access to important data and use it for their personal purpose to gain something.

The main functions of intrusion detection are:

1. To detect if an intrusion has occurred in the network of the machine.
2. To determine who the intruder is and what they accessed.
3. To prevent the intrusion from occurring in the future.
4. To give the identity of the intruder using these IP or other details.

Intrusion detection is of following two types:

Host based.

Network-based

Host-based system monitors system calls or logs.

Network based system monitors flow of network packets.

Modern IDS/IS uses a combination of these two kinds of intrusion detection systems.

5. Attempt any four parts of the following:

(5×4=20)

Q.5. (a) Explain the difference between cyber bullying and cyber stalking.

Ans.

Cyber bullying	Cyber stalking
<ol style="list-style-type: none"><li>1. It is the use of intermission and communication technologies to support deliberate, repeated and hostile behaviour by an individual or group.</li><li>2. Common tactics used are of sexual remarks and threats.</li><li>3. Mostly kids are involved in this and not adults.</li><li>4. It is not a crime.</li></ol>	<ol style="list-style-type: none"><li>1. It is the use of internet or other electronic means to stalk on individual, a group or an organization.</li><li>2. They are vandalizing a search engine or encyclopedia to threaten a victim's earnings.</li><li>3. Kids as well as adults may be involved.</li><li>4. It is a crime in some countries.</li></ol>

Q.5. (b) Write and explain the essential goals of computer forensics.

Ans. The main goals of computer forensics are as follows:

1. **Preserving digital evidence:** It is used to make sure that digital evidence is not tampered with and is preserved.
2. **Recovery of evidence:** It is used to recover important evidence from different available resources.
3. **Identification:** Identify the important things in the given set of documents or objects.
4. **Extraction:** It is used to extract the data important to the investigation.
5. **Documentation:** It is used to document all the important data.
6. **Interpretation of data:** It is used to interpret the data so that it is legible.

Q.5. (c) Write and explain the issues involved in Internet Ethics.

Ans. There are different kinds of ethics for different kind of people. They are as follows:

Ethics for computer users:

**Software piracy:** One of the most pressing issue concerns the duplication of computer programs.

**Unauthorized access:** A computer hobbyist is someone who enjoys pushing his or her computer skills to the limit.

**Public and private networks.**

**Ethics for computer professional:**

Professional standards

Programme liability

**Ethics for business:**

Doing the business ethically.

**Q.5. (d) What is e-commerce? Describe in brief.**

**Ans.** E-commerce or electronic commerce consists of the buying and selling of products or services over electronic systems such as computer and its networks. The amount of trade conducted electronically has grown extraordinarily with widespread of internet usage. Modern electronic commerce typically uses the world wide web at least at some point in the transaction although it can encompass, in compare a wider range of technologies such as e-mail; mobile devices and telephones as well.

A large percentage of electronic commerce is conducted entirely electronically for virtual items such as premium content on a website.

**Q.5. (e) Write and explain the advantages and disadvantages of Bluetooth technology.**

**Ans. Advantages:** Bluetooth has lot to offer with an increasingly difficult market place. Bluetooth helps to bring with it the promise of freedom from the cables and implicit in networking that has yet to be

matched by LAN. In the key market place of wireless and hand held devices the closest competition to bluetooth is infrared.

**Disadvantages:** The disadvantage of bluetooth technology are infrared can have data rates of upto 4 mbps while bluetooth only offers speeds of upto 1 mbps. The greater the distance, the weaker the signal gets and it is made open to interpretation and attacks.

**Q.5. (f) Describe the two popular modes of data transfer.**

**Ans.** Two popular modes of data transfer are synchronous data transfer and asynchronous data transfer.

Synchronous data transfer is the transfer of data between two devices on a network where they both carry out a predetermined set of interactions based on a common clock pulse.

Asynchronous data transfer is the transfer of data between two devices on a network where they both carry out a predetermined set of interaction based on a private clock pulse.