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J.K. SHAH TEST SERIES
Evaluate Learn Succeed

Sub: ENTERPRISE INFORMATION SYSTEMS
Topics – Information systems & its components .
Section 1 : Information system components,
E- commerce, m-commerce & emerging technology
Test Code – N11
Branch: Multiple   Date:
(50 Marks)

Note : All Questions are compulsory

Answer 1

- In computing, virtualization means to create a virtual version of a device or resource, such as a server, storage device, network or even an operating system where the framework divides the resource into one or more execution environments. Virtualization refers to technologies designed to provide a layer of abstraction between computer hardware systems and the software running on them. **(2 marks)**
- The core concept of Virtualization lies in Partitioning, which divides a single physical server into multiple logical servers. Once the physical server is divided, each logical server can run an operating system and applications independently.**(1 marks)**
- For example - Partitioning of a hard drive is considered virtualization because one drive is partitioned in a way to create two separate hard drives. Devices, applications and human users are able to interact with the virtual resource as if it were a real single logical resource.**(1/2 mark)**

Major applications: (1/2 mark for each point)

a) Server Consolidation: Virtual machines are used to consolidate many physical servers into fewer servers, which in turn host virtual machines. This is also known as "Physical-to-Virtual" or 'P2V' transformation.

b) Disaster Recovery: Virtual machines can be used as "hot standby" environments for physical production servers. This helps to take over or shift the load of physical server to virtual server in case of disaster or shutdown of physical server.

c) Testing and Training: Hardware virtualization also help to act as training platforms as these provide combination of multiple resources and without affecting the working of underlying physical resources. This can be very useful such as in kernel development and operating system courses.

d) Portable Applications: Portable applications are needed when running an application from a removable drive, without installing it on the system's main disk drive.

e) Portable Workspaces: Recent technologies have used virtualization to create portable workspaces on devices like iPods and USB memory sticks.
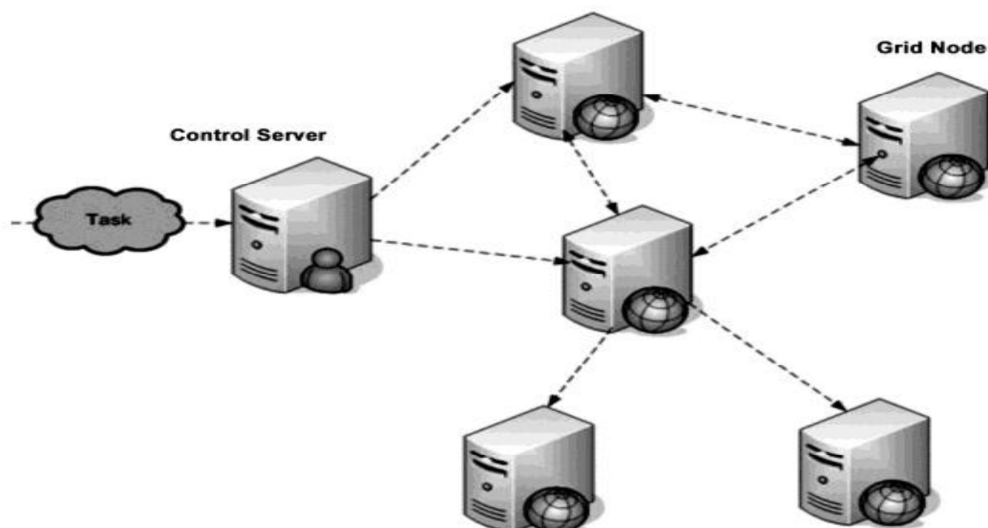
Answer 2

Grid Computing: (2 marks)

a) This is a computer network in which each computer's resources are shared with every other computer in the system.

b) Processing power, memory and data storage are all community resources that authorized users can tap into and leverage for specific tasks.

c) In Grid computing, every distributed resources (i.e. which may be located at different location) is shared in such a way that grid computing network turns into a powerful supercomputer for processing.

d) In grid computing, every authorized user or computer system gets access to enormous processing power.

Some of the application areas / reasons of using Grid Computing are as follows: (3 marks)

a) Grid computing helping people involved in complex science and engineering research by allowing them to use heterogeneous computing resources, information systems and instruments which are located around the world.

b) Civil engineers work together to design, execute, & analyze shake table experiments (i.e. earthquake experiment for building structure)

c) An insurance company mines data from partner hospitals for fraud detection.

d) An application service provider offloads excess load to a compute cycle provider.

e) An enterprise like Amazon uses grid computing to configure internal & external resources to support e-Business.

Answer 3

- Access to additional resources: Grid computing also helps to use the additional resources than multiple servers and storage devices based on requirements. **(1 mark)**
- Making use of Underutilized Resources: In most organizations, there are large amounts of underutilized computing resources including server machines. Grid computing provides a framework for exploiting these underutilized resources and thus has the possibility of substantially increasing the efficiency of resource usage. **(1 mark)**
- Resource Balancing: Grid helps to perform the resource balancing by using all the resources in an optimum manner to provide efficient performance. **(1 mark)**
- Parallel CPU capacity: Grid computing helps to use many CPUs of different servers in parallel which further helps to increase the performance.**(1/2 mark)**
- Reliability: Grid computing provides high reliability environment for working that is users can work without failure.**(1/2 mark)**
- Virtual Resources and Virtual Organization for collaboration: Grid computing helps to provide collaboration among large number of organizations and large no of users for performing complex task.**(1/2 mark)**
- Management: Grid computing offers a range of network management activities including virtualization to increase the effectiveness of grid network. The grid offers management of priorities among different projects. **(1/2 mark)**

Answer 4

a) Elasticity and Scalability: Gives us the ability to expand and reduce resources according to the specific service requirement. **(1 mark)**

b) Pay-per-Use: We pay for cloud services only when we use them, either for the short term or for a longer duration. **(1 mark)**

c) On-demand: Because we invoke cloud services only when we need them, they are not permanent parts of the IT infrastructure, this is a significant advantage for cloud use as opposed to internal IT services. With cloud services there is no need to have dedicated resources waiting to be used, as is the case with internal services. **(1 mark)**

d) Resiliency: The resiliency of a cloud service offering can completely isolate the failure of server and storage resources from cloud users. Work is migrated to a different physical resource in the cloud with or without user awareness and intervention. **(1 mark)**

e) Multi Tenancy / Sharing: Public cloud service providers often can host the cloud services for multiple users within the same infrastructure. **(1/2 mark)**

f) Workload Movement: This characteristic is related to resiliency and cost considerations. Here, cloud-computing providers can migrate workloads across servers both inside the data center and across data centers (even in a different geographic area). This migration might be necessitated by cost. **(1/2 mark)**

Answer 5 (1/2 mark for eah point)

- Achieve economies of scale: Volume output or productivity can be increased even with fewer systems and thereby reduce the cost per unit of a project or product.
- Globalize the workforce: People worldwide can access the cloud with Internet connection.
- Streamline business processes: Getting more work done in less time with less resources are possible.
- Reduce capital costs: Not required to spend huge money on hardware, software, or licensing fees.
- Pervasive accessibility: Data and applications can be accesses any time anywhere using any smart computing device, making our life so much easier.
- Monitor projects more effectively: It is feasible to confine within budgetary allocations and can be ahead of completion cycle times.
- Less personnel training is needed: It takes fewer people to do more work on a cloud, with a minimal learning curve on hardware and software issues.
- Minimize maintenance and licensing software: As there is no too much of non-premise computing resources, maintenance becomes simple and updates and renewals of software systems rely on the cloud vendor or provider.
- Improved flexibility: It is possible to make fast changes in our work environment without serious issues at stake.

Answer 6

Meaning:

- It refers to the technology that allows transmission of data via any portable device without having to be connected to a fixed physical link. **(1 mark)**

Components of Mobile Computing: (4 marks)

Mobile computing involves Mobile Communication, Mobile Hardware and Mobile Software;

a)   Mobile Communication:
- Refers to the infrastructure put in place to ensure that seamless and reliable communication goes on.
- These would include devices such as Protocols, Services, Bandwidth and Portals necessary to facilitate and support the stated services.

b)   Mobile Hardware:
- It includes mobile devices or device components that receive or access the service of mobility.
- They would range from Portable laptops, Smart phones, Tablet PC's to Personal Digital Assistants.
- These devices will have receptors that are capable of sensing and receiving signals.

c)   Mobile Software:
- It is the actual Program that runs on the mobile hardware.
- This is the engine of that mobile device. In other terms, it is the essential component that makes the mobile device operates.
- Example: Apple IOS, Google Android, Blackberry Operating system.

Answer 7 (5 marks)

An Information System model comprises of following steps:

- **Input:** Data is collected from an organization or from external environments and converted into suitable format required for processing.
- **Process:** A process is a series of steps undertaken to achieve desired outcome or goal. Information Systems are becoming more and more integrated with organizational processes, bringing more productivity and better control to those processes. But simply automating activities using technology is not enough. Businesses looking to effectively utilize Information Systems do more. Using technology to manage and improve processes, both within a company and externally with suppliers and customers, is the goal. Technology buzzwords such as business process re-engineering, business process management and enterprise resource planning all must do with continued improvement of these business processes and the integration of technology with them. Businesses hoping to gain an advantage over their competitors are highly focused on this component of Information Systems.

- **Output:** Then information is stored for future use or communicated to user after application of respective procedure on it.

Answer 8 (1 mark for each point)

Some of the important characteristics of Computer Based Information Systems are given as follows:

- All systems work for predetermined objectives and the system is designed and developed accordingly.
- In general, a system has several interrelated and interdependent subsystems subsystems for its inputs.
- whole system does not work. However, it depends on 'how the subsystems are interrelated'.
- The way a subsystem works with another subsystem is called interaction. The different subsystems interact with each other to achieve the goal of the system.
- The work done by individual subsystems is integrated to achieve the central goal of the system. The goal of individual subsystem is of lower priority than the goal of the entire system.

Answer 9

An Operating System (OS) is a set of computer programs that manages computer hardware resources and acts as an interface with computer applications programs. The operating system is a vital component of the system software in a computer system. Application programs usually require an operating system to function that provides a convenient environment to users for executing their programs. Computer hardware with operating system can thus be viewed as an extended machine, which is more powerful and easy to use. Some prominent Operating systems used nowadays are Windows 7, Windowss 8, Linux, UNIX etc.

All computing devices run an operating system. For personal computers, the most popular operating systems are Microsoft's Windows, Apple's OS X, and different versions of Linux. Smart phones and tablets run operating systems as well, such as Apple's iOS, Google Android, Microsoft's Windows Phone OS, and Research in Motion's Blackberry OS. **(2 marks)**

A variety of activities are executed by Operating systems which include: **(3 marks)**

- **Performing hardware functions:** Application programs to perform tasks must obtain input from keyboards, retrieve data from disk & display output on monitors. Achieving all this is facilitated by operating system. Operating system acts as an intermediary between the application program and the hardware.
- **User Interfaces:** An important function of any operating system is to provide user interface. If we remember DOS days, it had a command based User Interface (UI) i.e. text commands were given to computer to execute any command. But today we are more used to Graphic User Interface (GUI) which uses icons & menus like in the case of Windows. So, how we interface with our system will be provided by Operating system.
- **Hardware Independence:** Every computer could have different specifications and comfigurations of hardware. If application developer would have to rewrite code for every configuration s/he would be in a big trouble. Fortunately, we have operating system, which provides Application Program Interfaces (API), which can be used by application developers to create application software, thus obviating the need to understand the inner workings of OS and hardware. Thus, OS gives us hardware independence.
- **Memory Management:** Memory Management features of Operating System allow controlling how memory is accessed and maximize available memory & storage. Operating systems also provides Virtual Memory by carving an area of hard disk to supplement the functional memory capacity of RAM. In this way, it augments memory by creating a virtual RAM.
- **Task Management:** Task Management feature of Operating system helps in allocating resources to make optimum utilization of resources. This facilitates a user to work with more than one application at a time i.e. multitasking and allows more than one user to use the system i.e. time sharing.
- **Networking Capability:** Operating systems can provide systems with features & capabilities to help connect computer networks. Like Linux & Windows 8 give us an excellent capability to connect to internet.
- **Logical Access Security:** Operating systems provide logical security by establishing a procedure for identification & authentication using a User ID and Password. It can log the user access thereby providing security control.

- **File management:** The operating system keeps a track o where each file is stored and who can access it, based on which it provides the file retrieval.

Answer 10 (1 mark for each)

The different types of application software are as follows:

- **Application Suite:** Has multiple applications bundled together. Related functions, features and user interfaces interact with each other. E.g. MS Office 2010 which has MS Word, MS Excel, MS Access, etc.
- **Enterprise Software:** Addresses an enterprise's needs and data flow in a huge distributed environment .E.g. ERP Applications like SAP.
- **Enterprise Infrastructure Software:** Provides capabilities required to support enterprise software systems. E.g. email servers, Security software.
- **Information Worker Software:** Addresses individual needs required to manage and create information for individual projects within departments. E.g. Spreadsheets, CAAT (Computer Assisted Audit Tools) etc.
- **Content Access Software:** Used to access contents and addresses a desire for published digital content and entertainment. E.g. Media Players, Adobe Digital etc.
- **Educational Software:** Holds contents adopted for use by students. E.g. Examination Test CDs
- **Media Development Software:** Addresses individual needs to generate and print electronic media for others to consume. E.g. Desktop Publishing, Video Editing etc.

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