SUGGESTED SOLUTION

IPCC MAY 2017 EXAM

INFORMATION TECHNOLOGY
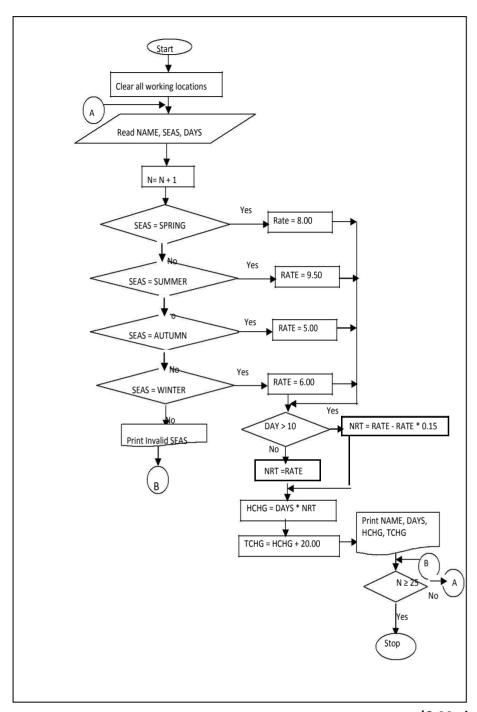
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BRANCH - (MULTIPLE) (Date : 04.12.2016)

Answer-1 (a) :

(6 Marks)

Answer-1 (b) :

(a)   Server – A server is one or more multi-user processors with shared memory providing computing, connectivity and the database services and the interfaces relevant to the business need.   **(2 Marks)**

(b)   Protocol – A protocol is the formal set of rules for communicating, including rules for timing of message exchanges, the type of electrical connection used by the communications devices, error detection techniques, means of gaining access to communications channels, and so on.   **(2 Marks)**

Answer-1 (c) :

Synchronous Transmission	Asynchronous Transmission
Allows characters to be sent down the line without Start-Stop bits.	Each data word is accompanied with start and stop bits.
Transmission is faster as in absence of Start and Stop bits, many data words can be transmitted per second.	Extra Start and Stop bits slow down the transmission process relatively.
The synchronous device is more expensive to build as it must be smart enough to differentiate between the actual data and the special synchronous characters.	It is relatively cheaper.
Chances of data loss are relatively higher.	More reliable as the start and stop bits ensure that the sender and the receiver remain in step with one another.
It is more efficient.	It is relatively less efficient.

(4 Marks)

Answer-2 (a) :

Some benefits of Grid Computing are as follows:

Making use of Underutilized Resources: Grid computing provides a framework for exploiting underutilized resources and has the possibility of substantially increasing the efficiency of resource usage by aggregating this unused storage into a much larger virtual data store. **(1 Mark)**

Resource Balancing: The grid can offer a resource balancing effect by scheduling grid jobs on machines with low utilization. This feature of grid computing handles occasional peak loads of activity in parts of a larger organization. **(1 Mark)**

Parallel CPU Capacity: A CPU-intensive grid application can be thought of as many smaller sub-jobs, each executing on a different machine in the grid. A perfectly scalable application will, for example, finish in one tenth of the time if it uses ten times the number of processors **(1 Mark)**

Virtual resources and virtual organizations for collaboration: The users of the grid can be organized dynamically into a number of virtual organizations, each with different policy requirements. These virtual organizations can share their resources such as data, specialized devices, software, services, licenses, and so on, collectively as a larger grid. **(1 Mark)**

Access to additional resources: In addition to CPU and storage resources, a grid can provide access to other resources as well. For example, if a user needs to increase their total bandwidth to the Internet to implement a data mining search engine, the work can be split among grid machines that have independent connections to the Internet. **(1 Mark)**

Reliability: High-end conventional computing systems use expensive hardware to increase reliability. The machines also use duplicate processors in such a way that when they fail, one can be replaced without turning the other off. **(1 Mark)**

Management: The grid offers management of priorities among different projects. Aggregating utilization data over a larger set of projects can enhance an organization's ability to project future upgrade needs. When maintenance is required, grid work can be rerouted to other machines without crippling the projects involved. **(1 Mark)**

Answer-2 (b) :

Control is defined as policies, procedures, practices and organization structure that are designed to provide reasonable assurance that business objectives are achieved and und desired events are prevented or detected and corrected. Major control objectives are given as follows: **(1 Mark)**

Authorization – ensures that all transactions are approved by responsible personnel in accordance with their specific or general authority before the transaction is recorded. **(1 Mark)**

Completeness – ensures that no valid transactions have been omitted from the accounting records. **(1 Mark)**

Accuracy – ensures that all valid transactions are accurate, consistent with the originating transaction data, and information is recorded in a timely manner. **(1 Mark)**

Validity – ensures that all recorded transactions fairly represent the economic events that actually occurred, are lawful in nature, and have been executed in accordance with management's general authorization. **(1 Mark)**

Physical Safeguards and Security – ensures that access to physical assets and information systems are controlled and properly restricted to authorized personnel. Error Handling – ensures that errors detected at any stage of processing receive prompts corrective actions and are reported to the appropriate level of management. **(1 Mark)**

Segregation of Duties – ensures that duties are assigned to individuals in a manner that ensures that no one individual can control both the recording function and the procedures relative to processing a transaction. **(1 Mark)**

Answer-3 (a) :

The key factors to be considered in implementing BPM are:

a) Scope: A single process, a department, the entire company **(1 Mark)**

b) Goals: Process understanding, improvement, automation, reengineering, optimization **(1 Mark)**

c) Methods to be used: Six Sigma, BPM Life Cycle Method, TQM, Informal methods **(1 Mark)**

d) Skills Required: Consultants, Train Employees, Formal Certification, Basic Education, Existing Skill sets **(1 Mark)**

e) Tools to be used: White-Boards, Sticky Notes, Software For Mapping, Documenting, Software for Simulation, Comprehensive BPMS **(1 Mark)**

f) Investments to Make: Training, Tools, Time **(1 or Mark)**

g) Sponsorship/Buy-in Needed: Executive Level, Department Level, Process Owner Level, Employee Level **(1 Mark)**

Answer-3 (b) :

Bus Topology: In a Bus Topology, a single length of wire, cable, or optical fiber connects a number of computers. All communications travel along this cable, which is called a bus. **(1 Mark)**

Advantages of Bus Topology include the Following:

• There is no host computer or file server, which makes bus network reliable as well as easy to use and understand.

• If one of the microcomputers fails, it will not affect the entire network.

• It requires the least amount of cable to connect the computers together and therefore is less expensive than other cabling arrangements.

- It is easy to extend. Two cables can be easily joined with a connector, making a longer cable for more computers to join the network.

- A repeater can also be used to extend a bus configuration. **(2 Marks)**

Disadvantages of Bus Topology include the Following:

- Heavy network traffic can slow a bus considerably since any computer can transmit at any time.

- Each connection between two cables weakens the electrical signal.

- The bus configuration can be difficult to troubleshoot. A cable break or malfunctioning computer can be difficult to find and can cause the whole network to stop functioning. **(2 Marks)**

Answer-4 (a) :

If used properly and to the extent necessary, working with data in the cloud can vastly benefit all types of businesses. Mentioned below are some of the advantages of this technology:

1. **Cost Efficient:** Cloud computing is probably the most cost efficient method to use, maintain and upgrade. **(1 Mark)**

2. **Almost Unlimited Storage:** Storing information in the cloud gives us almost unlimited storage capacity. **(1 Mark)**

3. **Backup and Recovery:** Since all the data is stored in the cloud, backing it up and restoring the same is relatively much easier than storing the same on a physical device. Furthermore, most cloud service providers are usually competent enough to handle recovery of information. **(1 Mark)**

4. **Automatic Software Integration:** In the cloud, software integration is usually something that occurs automatically. Not only that, cloud computing allows us to customize the options with great ease. Hence, we can handpick just those services and software applications that we think will best suit the particular enterprise. **(1 Mark)**

5. **Easy Access to Information:** Once we register ourselves in the cloud, we can access the information from anywhere, where there is an Internet connection. **(1 Mark)**

6. **Easy Access to Information:** Once we register ourselves in the cloud, we can access the information from anywhere, where there is an Internet connection. **(1 Mark)**

Answer-4 (b) :

Organizational Business Processes: Organizational business processes are high level processes that are typically specified in textual form by their inputs, their outputs, their expected results and their dependencies on other organizational business processes. These business processes act as supplier or consumer processes. To manage incoming raw materials provided by a set of suppliers is an example of an organizational business process. While organizational business processes characterize coarse-grained business functionality, there are multiple operational business processes that contribute to one organizational business process. **(3 Marks)**

Operational Business Processes: In Operational Business Processes, the activities and their relationships are specified, but implementation aspects of the business process are disregarded. Operational business processes are specified by business process models. These are the basis for developing implemented business processes. **(2 Marks)**