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SUGGESTED SOLUTION

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INFORMATION TECHNOLOGY

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Answer-1 (a) :

Functional Based Classification of Telecommunication networks is as follow:

1. Client-Server: This partitions tasks or workloads between the providers of a resource or service, called servers, and service requesters, called clients.
2. Peer-to-Peer: It is a type of decentralized and distributed network architecture in which individual nodes in the network (called "peers") act as both suppliers and consumers of resources.
3. Multi-Tier: It provides a model by which developers can create flexible and reusable applications.

(5 Marks)

Answer-1 (b) :

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

Answer-2 (a) :

To develop secured grid architecture, following constraints are taken from the characteristics of grid environment and application.

- **Single Sign-on**: A user should authenticate once and they should be able to acquire resources, use them, and release them and to communicate internally without any further authentication.
- **Protection of Credentials**: User passwords, private keys, etc. should be protected.

- **Interoperability with local security solutions**: Access to local resources should have local security policy at a local level. Despite of modifying every local resource there is an inter-domain security server for providing security to local resource.
- **Exportability**: The code should be exportable i.e. they cannot use a large amount of encryption at a time. There should be a minimum communication at a time.

(5 Marks)

Answer-2(b)

Information System Life Cycle is commonly referred as Software/System Development Life Cycle (SDLC) which is a methodology used to describe the process of building information systems. SDLC framework provides a sequence of activities for system designers and developers to follow. It consists of a set of steps or phases in which each phase of the SDLC uses the results of the previous one. Various phases for developing an Information System are given as follows:

Phase 1: System Investigation: This phase examines that 'What is the problem and is it worth Solving' ? A feasibility study is done under the dimensions – Technical, Economical, Legal, Operational etc.

Phase 2: System Analysis: This phase examines that 'What must the Information System do to solve the problem'? System analyst would be gathering details about the current system and will involve interviewing staff; examining current business; sending out questionnaires and observation of current procedures.

The Systems Analyst will examine data and information flows in the enterprise using data flow diagrams; establish what the proposed system will actually do (not how it will do it); analyze costs and benefits; outline system implementation options. (For example: in- house or using consultants); consider possible hardware configurations; and make recommendations

Phase 3: System Designing:
This phase examines that 'How will the Information System do what it must do to obtain the solution to the problem'? This phase specifies the technical aspects of a proposed system in terms of Hardware platform; Software; Outputs; Inputs; User interface; Modular design; Test plan; Conversion plan and Documentation.

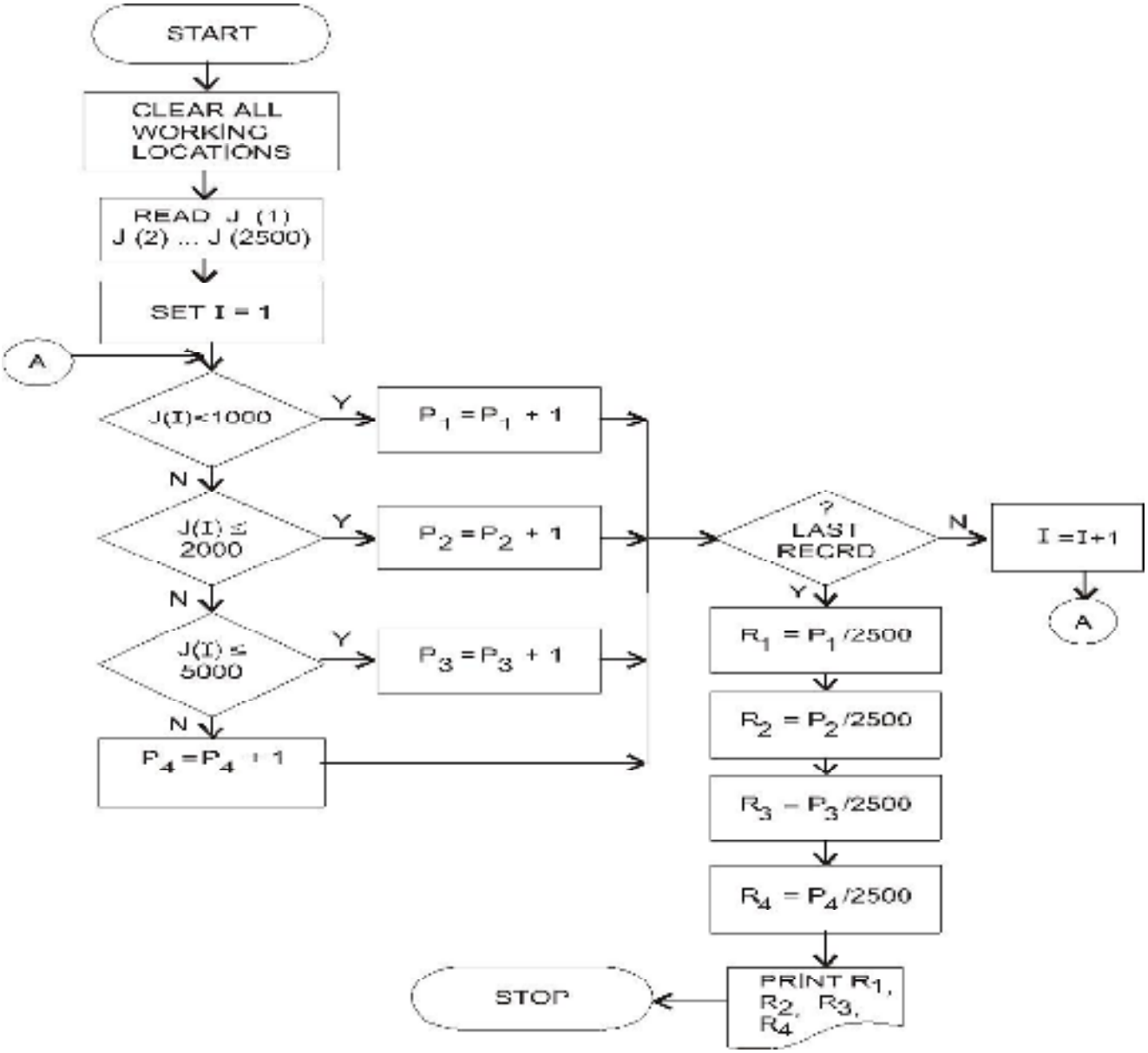
Phase 4: System Implementation:
This phase examines that 'How will the solution be put into effect'? This phase involves coding and testing of the system; acquisition of hardware and software; and either installation of the new system or conversion of the old system to the new one.

Phase 5: System Maintenance and Review: This phase evaluates results of solution and modifies the system to meet the changing needs. Post implementation review would be done to address Programming amendments; Adjustment of clerical procedures; Modification of Reports, and Request for new program

(5 Marks)

Answer-3 (a) :

(i) Less than Rs. 1,000
(ii) Rs. 1,000 to Rs. 2,000
(iii) Rs. 2,001 to Rs. 5,000
(iv)Above Rs. 5,000.
Draw a flow chart for finding the percentage of the employees in each category.



(8 Marks)

Answer-3 (b):

iPad: The iPad runs a version of iOS. iOS is designed for finger based use and has none of the tiny features which required a stylus on earlier tablets. Apple introduced responsive multi touch gestures, like moving two fingers apart to zoom in. iOS uses less power, and so gives better battery life than the Intel devices used by Windows tablets.

(2 Marks)

Answer-4 (a):

Information security administrators are responsible for ensuring that information systems assets are secure. Assets are secure when the expected losses that will occur over some time are at an acceptable level. Some of the major threats and to the security of information systems and their controls are as discussed

1. **Fire**: Well-designed, reliable fire-protection systems must be implemented.
2. **Water:** Facilities must be designed and sited to mitigate losses from water damage
3. **Energy Variations:** Voltage regulators, circuit breakers, and uninterruptible power supplies can be used.
4. **Structural Damage:** Facilities must be designed to withstand structural damage.
5. **Pollution:** Regular cleaning of facilities and equipment should occur.
6. **Unauthorized Intrusion:** Physical access controls can be used.
7. **Viruses and Worms:** Controls to prevent use of virus-infected programs and to close security loopholes that allow worms to propagate.
8. **Misuse of software, data and services:** Code of conduct to govern the actions of information systems employees.
9. **Hackers:** Strong, logical access controls to mitigate losses from the activities of hackers.

(5 Marks)

Answer-4 (b):

Mobile Computing: Mobile Computing is the use of portable computing devices (such as laptop and handheld computers) in conjunction with mobile communication technologies to enable users to access the Internet and data on their home or work computers from anywhere in the world. Mobile computing is enabled by use of mobile devices (portable and hand held computing devices) such as PDA, laptops, mobile phones, MP3 players, digital cameras, tablet PC and Palmtops on a wireless network.
Major concerns relating to mobile computing are given as follows:

•Mobile computing has its fair share of security concerns as any other technology.

•Dangers of misrepresentation
- Another problem plaguing mobile computing are credential verification.

•Power consumption - When a power outlet or portable generator is not available, mobile computers must rely entirely on battery power.

•Potential health hazards

(5 Marks)

Answer-5(a)

Knowledge Management Systems (KMS) refer s to any kind of IT system that stores and retrieves knowledge, improves collaboration, locates knowledge sources, mines repositories for hidden knowledge, captures and uses knowledge, or in some other way enhances the knowledge management process.KMS treats the knowledge component of any organization's activities as an explicit concern reflected in strategy, policy, and practice at all levels of the organization.

Two broad categories of knowledge exist – Explicit and Tacit. Explicit Knowledge is formalized, articulated and written whereas Tacit Knowledge resides in a few often-in-just one person and has not been captured by the organization.

Knowledge base is a special kind of database for knowledge management. It is an information repository that provides a means for information to be collected, organized, shared, searched and utilized. It can be either machine-readable or intended for human use.

A Knowledge Discovery in databases system is a value-added intranet with facilities to search and identify captured knowledge, or identify experts who have the knowledge. The system will also help us establish contact with the expert and have a dialogue with them. It will then capture and make available the transcripts of such discussions, whether they be on chat, e-mail or discussion forums

(5 Marks)

Answer 5(B)

Some of the benefits of Business Process Management Systems (BPMS) are as follows:

(a) **Automating repetitive business processes**: Processes such as report creation and distribution or the monitoring of or reporting on company's Key Performance Indicators (KPI) reduces the manual operational costs and helps employees to concentrate on activities that are important to the success of business.

(b)**BPMS works by 'loosely coupling' with a company's existing applications**: This enables it to monitor, extract, format and distribute information to systems and people; in line with business events or rules.

(c)**Operational Savings**: BPM focuses on optimization of processes. The processes that are repetitive are optimized and lead to reduced expenses which translate to immediate cost savings. By automating a task, ROI of BPM that requires six hours of manual intervention, one can expect to cut that time to half. Thus, three hours multiplied by the number of times the process is completed in a cycle will yield significant cost saving.

(d) **Reduction in the administration involved in Compliance and ISO Activities:** Be it a quality assurance initiative such as the ISO standards, a financial audit law, or an IT systems best-practice implementation, companies worldwide are seeing the need to manage compliance as part of their everyday business activities. The BPM is ideally suited to help support companies in their quest for process improvement and compliance/governance certification. It gives full control over process and document change, clarity of inherent risks, and ease with which process knowledge is communicated across the company.

(e)**Freeing-up of employee time**: While the euphuism “time is money” is often over-used, it is very relevant to this topic, because in business, for each additional hour it takes to complete a manual business process, there is a hard cost associated with employee time as well as soft costs associated with losing business or lowered productivity. Another area where time comes into play is in opportunity costs.

(5 Marks)