Q.1 a. Give two examples each of Strategic and Operational Decisions.

Answer:

Here are some examples of operational decisions:

• Do we extend credit to this customer?
• Are these transactions evidence of fraud?
• How can we reroute this shipment to meet the promised delivery date?
• What book do we recommend to this customer?
• Should this supplier be on the approved list?

By contrast, here are examples of strategic decisions:
• Do we acquire company X or company Y?
• Do we target retail or energy companies as an added vertical?
• Is it time to discontinue a product line or to launch a new one?

b. Will ERP, if implemented, permit the organisation to achieve the same business volume with reduced manpower?

Answer:
Yes because ERP is a process by which certain technologies and know-how can be incorporated and put into force, which can reduce and eliminate surplus or unwanted manpower thus results in reduction of cost and increment in profit.

c. What does Human factors feasibility and Legal feasibility assess?

Answer:

Human factor feasibility assesses:

- Employee, customer, supplier acceptance
- Management support
- The right people for the various new or revised roles

Legal feasibility assesses

- Possible patent or copyright violations
- Software licensing for developer side only
- Governmental restrictions

d. Briefly describe *Services-oriented architecture* (SOA).

Answer:
Services-oriented architecture (SOA) is a framework for constructing and interlinking a company's back-end systems in order to make the computing systems more flexible and cost-effective. SOA communications, enabled by Web Services, are different from existing middleware. Under SOA and Web Services, applications automatically link to one another as needed, which is the concept of "loose coupling."

e. What do you mean by Back Doors and Malicious applets?

Answer:
Back Doors: A hidden point of entry to be used in case the original entry point has been detected or blocked

Malicious Applets: Tiny Java programs that misuse your computer's resources, modify files on the hard disk, send fake e-mail, or steal passwords

f. While implementing a Business Intelligence (BI)programme, one may like to pose a number of questions. Give any four example queries.

Answer:

Goal Alignment queries: What strategic goal(s) of the organisation will the programme address? What organisational mission/vision does it relate to?

Baseline queries: Does the organisation have the capability of monitoring important sources of information? What data does the organisation collect and how does it store that data? What are the statistical parameters of this data, e.g., how much random variation does it contain? Does the organisation measure this?

Cost and risk queries: What is the risk that the initiative will fail? This risk assessment should be converted into a financial metric and included in the planning?

Customer and Stakeholder queries: Determine who will benefit from the initiative and who will pay. Who has a stake in the current procedure? What kinds of customers/stakeholders will benefit directly from this initiative? Who will benefit indirectly? What are the quantitative / qualitative benefits? Is the specified initiative the best way to increase satisfaction for all kinds of customers, or is there a better way? How will customers' benefits be monitored?

Metrics-related queries: One must decide what metrics to use for each piece of information being gathered. Are these the best metrics? How do we know that? How many metrics need to be tracked? If this is a large number (it usually is), what kind of system can be used to track them? Are the metrics standardized, so they can be benchmarked against performance in other organisations? What are the industry standard metrics available?

Measurement Methodology-related queries: What methods will be used, and how frequently will the organisation collect data? Do industry standards exist for this? Is this the best way to do the measurements? How do we know that?

Results-related queries: How can one demonstrate that the BI initiative (rather than other factors) contributed to a change in results? How much of the change was probably random?

g. What are the steps involved in IT Risk Management Process?

Answer:

The steps involved in IT Risk Management Process are:

i) plan use of technology,
ii) assess the risk associated with the selected technology,
iii) decide how to implement the selected technology, and
iv) establish a process to measure and monitor risk.

Q.2 a. Differentiate between:

(i) Deterministic and Probabilistic systems

(ii) Sub-system and Supra systems

Answer:

(i) A **deterministic system** is one in which the occurrence of all events is known with certainty. If the description of the system state at a particular point of time of its operation is given, the next state can be perfectly predicted.

A **probabilistic system** is one in which the occurrence of events cannot be perfectly predicted. Though the behavior of such a system can be described in terms of probability, a certain degree of error is always attached to the prediction of the behavior of the system.

(ii) Subsystem: A major component of a system. It is made up of two or more interacting and interdependent components. Subsystems of a system interact in order to attain their own purpose(s) and the purpose(s) of the system in which they are embedded.

Suprasystem: The entity that is composed of a number of component systems organized in interacting relationships in order to serve their embedding suprasystem.

b. What are functional information systems? Describe the sub-systems of various functional information systems.

Answer:

Functional Information System is based on the various business functions such as Production, Marketing, Finance and Personnel etc. These departments or functions are known as functional areas of business. Each functional area requires applications to perform all information processing related to the function. The popular functional areas of the business organization are:

Financial Information System:

Financial information system is a sub-system of organizational management information system. This sub-system supports the decision-making process of financial functions at the level of an organization.

Marketing Information System

This sub-system of management information system provides information about various functions of the marketing system of an organization. Marketing is another functional area of the business organization, which is engaged in marketing (selling) of its products to its customers.

Important functions of the marketing process include the following.

- The marketing identification function
- The purchase motivation function.
- The product adjustment function
- The physical distribution function
- The communication function
- The transaction function
- The post-transaction function

Production /manufacturing Information System

Manufacturing or production information system provides information on production /operation activities of an organization and thus facilitates the decision-making process of production managers of an organization. The main decisions to be taken in manufacturing system are:

- Product Design

Human Resources Information System

This functional information system supports the functions of human resource management of an organization. The human resource management function, in its narrow sense, it also known as personnel management .The function involves:

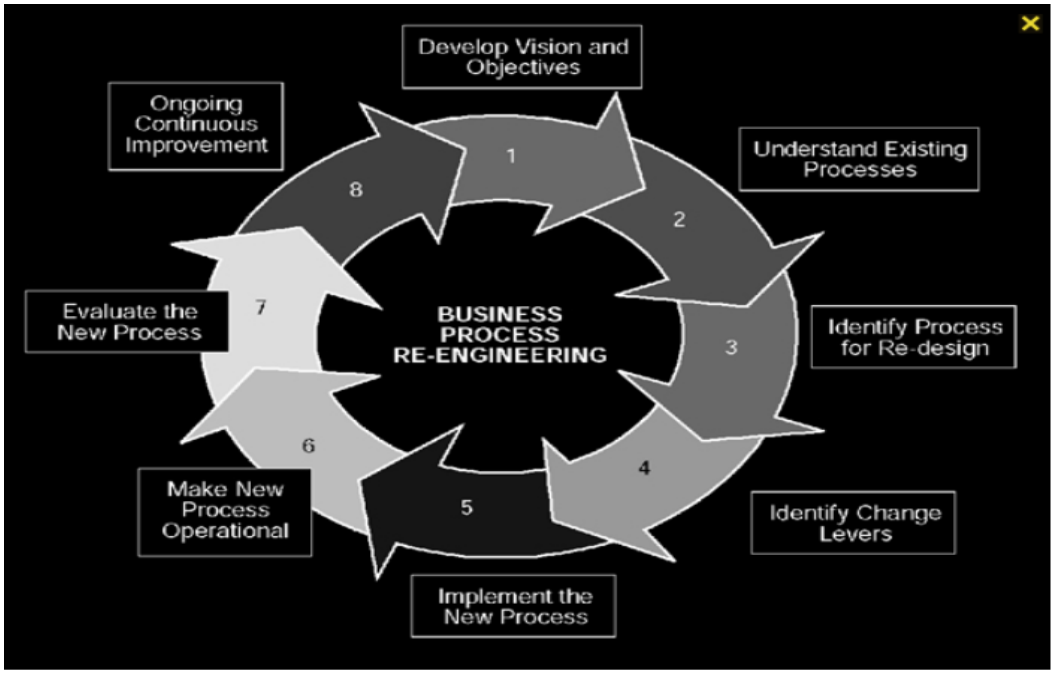
- Manpower planning.
- Staffing
- Training and development
- Performance evaluation, and
- Separation activities

Q.3 a. What is Business Process Re-Engineering (BPR)? Describe the steps involved in re- engineering business processes.

Answer:
Business process reengineering (BPR) is the analysis and redesign of workflow within and between enterprises.

Hammer and Champy felt that the design of workflow in most large corporations was based on assumptions about technology, people, and organizational goals that were no longer valid. They suggested seven principles of reengineering to streamline the work process and thereby achieve significant levels of improvement in quality, time management, and cost:

1. Organize around outcomes, not tasks.
2. Identify all the processes in an organization and prioritize them in order of redesign urgency.
3. Integrate information processing work into the real work that produces the information.
4. Treat geographically dispersed resources as though they were centralized.
5. Link parallel activities in the workflow instead of just integrating their results.
6. Put the decision point where the work is performed, and build control into the process.
7. Capture information once and at the source.



b. How is e-commerce used for competitive advantage? Explain.

Answer:

E-commerce plays a major role in the economy of today's world, attracting new entrants and causing havoc in the markets. It is becoming increasingly lucrative and is capturing the attention of investors, executives and entrepreneurs alike. New business models that can effectively integrate all the activities in their value chain to the internet will be the ones who are progressively more successful.

Success breeds attraction, and attraction – in the financial markets – spawns a swarm of people all clamoring for a share of the profitability. The inundation into the e-commerce industry has bred some spectacular successes with a string of failures along the way as well. But more than anything else, it has given rise to a state of competition that has never been seen before.

E-commerce has leveled the playing field flat, allowing tiny home-based businesses to compete with industrial giants and chip away at their market shares. With competition as stiff as it is these days, businesses need to come up with ways and strategies that set them apart from the rest of the pack. In order to survive, let alone be wildly successful, businesses need to maintain a competitive advantage in the industry.

A competitive advantage is a vital component of any business strategy. To achieve that goal, a business needs to be significant, perceptible, defensible, and of course profitable. The first question any businessman should ask themselves is what is it that they do that is different from everyone else. There are plenty of companies operating in any industry, so what makes a customer choose one over the other?

Recently, the simplest answer to these questions is whichever company is making a more effective use of e-commerce. The internet makes it ridiculously easy to collect information about products and services without a customer having to leave the comfort of their armchair. As such, consumers rely on retailers to make that search as user-friendly as possible and pay higher prices in return for the luxury.

Another strategy, known as product bundling, is one where a range of products and services are bundled together in a single package to prevent consumers from making comparisons between individual products. Innovation and the introduction of niche products into the market helps businesses compete against existing firms, while keeping the threat from new products and product substitutes at bay.

Using E-commerce help to stay ahead of the competition by taking advantage of the access it provides to non-existent markets. Customers who would have never bought a certain product from a shopping mall might just be convinced to purchase it over the internet. Intelligent use of customer information from exit forms and feedback can be used to study their preferences and offer tailor-made services.

There is enhanced communication for a business with its customers that promotes understanding and trust. A more productive flow of new ideas is also encouraged through better communication with other businesses in the industry.

The kind of access to a linked global marketplace that is available to a business today could only have been dreamed about by the previous generation. Even though a lot of businesses are still intimidated by the world of e-commerce, the fact that it is a tremendous way to sustain higher profits than the industry average can’t be denied.

Q.4a. What are the various factors to be considered for selection of software for any topic?

Answer:

Factor	Considerations
Size and location of user base	Does the proposed software support a few users in a single location? Or can it accommodate large numbers of geographically dispersed users?
Availability of system administration tools	Does the software offer tools that monitor system usage? Does it maintain a list of authorized users and provide the level of security needed?
Costs—initial and subsequent	Is the software affordable, taking into account all costs, including installation, training, and maintenance?
System capabilities	Does the software meet both current and anticipated future needs?
Existing computing environment	Is the software compatible with existing hardware, software, and communications networks?
In-house technical skills	Should the organization develop software applications in-house, purchase off the shelf, or contract software out of house?

b. Why do big companies still fail in their use of information technology? What should they be doing differently?

Answer:

Top Five Reasons for Success	*Top Five Reasons for Failure*
User involvement	Lack of user input
Executive management support	Incomplete requirements and specifications
Clear statement of requirements	Changing requirements and specifications
Proper planning	Lack of executive support
Realistic expectations	Technological incompetence

Certainly the reasons listed in the table above could some of the major causes of why companies fail in their use of information technology. However, it is important to note that the field of technology is changing at such a rapid pace that many large and successful companies are having difficulty keeping up with it. Other ideas may include such things as a demand for skilled employees in this area; the major expense involved in managing and developing systems and hardware acquisitions, increased and more aggressive competition from competitors both domestic and international.

Q.5 a. Describe about the three levels of analysis for which Information systems can support a company's competitive positioning.

Answer:

The three levels of analysis in which Information systems can support, a company's competitive positioning are: (a) Internal Business Management Systems, (b) Company's Core competence, and (c) Competitive environment Information systems.

a) Internal Business Management Systems: These systems provide the solutions for reduction of costs and for enhancement of management of performance. Control over piloting the set functions of the company can be carried out, by using these systems. The system output provides evaluation and qualitative reports.

b) Company's Core competence: To ensure that a company's core competency remains in an advantageous position / sustainable it must be difficult to mimic, unique, sustainable, superior to the competition, and applicable to multiple situations. This advantage could come from superior product quality, extensive distribution contracts, accumulated brand equity and positive company reputation, low cost production techniques, patents and copyrights, government protected monopoly, and superior employees and management team. In today's changing and competitive world the only truly sustainable competitive advantage is to build an organisation backed by an information system, that is so alert and so agile that it will always be able to find an advantage, no matter what changes occur.

b. What do you mean by knowledge management? What are the factors which make knowledge management implementation difficult in an organisation?

Answer:

Knowledge management (KM) is the management of knowledge within organisations. Knowledge Management caters to the critical issues of organisational adaptation, survival, and competence in the face of increasingly discontinuous environmental change.

The factors which make knowledge management implementation difficult in an organisation are:

- Geographically different locations for offices / units.
- language
- areas of expertise
- internal conflicts (e.g., professional territoriality)
- generational differences
- union-management relations
- incentives
- the use of visual representations to transfer knowledge (Knowledge visualization)

Q.6 a. What is an executive information system? Why these systems are used in an organization?

Answer:

An **executive information system** (**EIS**) is a MIS that facilitates and supports senior executive information and decision-making needs. It provides easy access to internal and external information relevant to organizational goals. It is commonly considered a specialized form of DSS.

EIS emphasizes graphical displays and easy-to-use User-interface. They offer strong reporting and drill-down capabilities. In general, EIS are enterprise-wide DSS that help top-level

executives analyze, compare, and highlight trends in important variables so that they can monitor performance and identify opportunities and problems. EIS and data-warehousing technologies are converging in the marketplace.

Explain following advantages of EIS

- Easy for upper-level executives to use, extensive computer experience is not required in operations
- Provides timely delivery of company summary information
- Information that is provided is better understood
- EIS provides timely delivery of information. Management can make decisions promptly.
- Improves tracking information
- Offers efficiency to decision makers

b. What are the advantages and disadvantages of group decisions?

Answer:

Advantages of Group Decision Making:

1. Since the group members have different specialties they tend to provide more information and knowledge. Also the information tends to be more comprehensive in nature and the groups can generate greater number of alternatives. Thus, the decision that requires the use of knowledge should give groups on advantage over individuals.
2. Implementation of the decision is more effective since the people who are going to implement the decision also participated in the decision-making process. This also increases the commitment of the people to see the implementation to success. It is important that the decision be accepted by all, because even a low quality decision that has acceptance can be more effective than a higher quality decision that lacks general acceptance.
3. The input from a large number of people eliminates the biases that are generally introduced due to individual decision-making. It also reduces the unreliability of individual's decisions.
4. The participative style of decision-making process builds up foundations as a training ground for subordinates who develop the skill of objective analysis of information and deriving of conclusions.
5. The group decision-making is more democratic in nature, while individual decision-making is more autocratic in nature.

Disadvantages of group decisions:

1. The process is highly time consuming in terms of assembling the right group and usually a group takes more time in reaching a consensus since there are too many opinions to be taken into consideration. The time problem increases with the group size. Accordingly, the speed of arriving at a solution must be considered, when group decision-making style is selected.
2. Some members may simply agree with the others for the sake of agreement since there are social pressures to conform and not to be the odd-man out. Thus the desire to be a good group member tends to silence disagreement and favors consensus. The social pressures can be very strong, inducing people to change their attitudes, perceptions and behaviors.
3. Many times, participants in group decisions have their own personal axes to grind or their own interests to protect. These self-centered interests lead to personality conflicts that may create interpersonal obstacles which may diminish the efficiency of the process as well as the quality of the decision.

4. The decision made by the group may not always be in accord with the goals and objectives of the organization. This is specially true when the goals of the group and those of the individuals do not reinforce each other.

c. Compare DSS with EIS.

Answer:

Contrasting DSS and EIS:

DSS are primarily used by middle and lower level managers to project the future, EIS's primarily serve the control needs of higher level management.

1. EISs primarily assist top management in uncovering a problem or an opportunity. Analysts and middle managers can subsequently use a DSS to suggest a solution to the problem.

2. At the heart of an EIS lies access to the data. EISs may work on the data extraction principal, as DSSs do, or they may be given access to the actual corporate databases or data warehouses.

3. EISs can reside on personal workstations or servers

Q.7 a. How can denial of service attacks be defended?

Answer:
Denial of service attacks be defended

- At the zombie machines (computers commandeered by cyber criminals)
  - Set and enforce security policies
  - Scan for vulnerabilities
- At the ISP
  - Monitor and block traffic spikes
- At the victim's website
  - Create backup servers and network connections

b. Write notes on any <u>THREE</u> of the following:

(i) Protection from cybercrime
(ii) Reasons for CRM failures
(iii) Principles of Fair Information Practices
(iv) Key Performance Indicators

Answer:

(i) Protection from cybercrime

Security Management for Internet Users	
1. Use antivirus and firewall software, and update it often to keep destructive programs off your computer. 2. Don't allow online merchants to store your credit card information for future purchases. 3. Use a hard-to-guess password that contains a mix of numbers and letters, and change it frequently. 4. Use different passwords for different websites and applications to keep hackers guessing. 5. Install all operating system patches and upgrades.	6. Use the most up-to-date version of your Web browser, e-mail software, and other programs. 7. Send credit card numbers only to secure sites; look for a padlock or key icon at the bottom of the browser. 8. Use a security program that gives you control over "cookies" that send information back to websites. 9. Install firewall software to screen traffic if you use DSL or a cable modem to connect to the Net. 10. Don't open e-mail attachments unless you know the source of the incoming message.

(ii) Reasons for CRM failures

- Lack of understanding and preparation
- Rely on application to solve a problem without first changing the business processes
- Business stakeholders not participating and not prepared

(iii) Principles of Fair Information Practices

1. There should be no personal records system whose existence is secret.
2. Individuals have right to access, inspect, review and amendment to systems that contain information about them.
3. Without prior consent there must be no use of personal information for purposes other than those for which it was gathered.
4. Managers of systems are responsible and can be held accountable and liable for the damages done by systems for their reliability and security.
5. Governments have the right to intervene in the Information relationships among private parties.

(iv) Business Intelligence (BI) often uses Key performance indicators (KPIs) to assess the present state of business and to prescribe a course of action. More and more organisations have started to make more data available more promptly. In the past, data only became available after a month or two, which did not help managers to adjust activities in time to hit Share Market targets. Recently, banks have tried to make data available at shorter intervals and have reduced delays.

The KPI methodology was further expanded with the Chief Performance Officer methodology which incorporated KPIs and root cause analysis into a single methodology.

(Give a relevant KPI example)

Text Book

Information Technology for Management, 6th Edition, Turban, Leidner, McLean, Wetherbe, John Wiley & Sons, Inc.