PAPER – 7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT

SECTION – A: INFORMATION TECHNOLOGY

QUESTIONS

1. Define the following terms briefly:
   (i) Business Process Reengineering (BPR) Team
   (ii) Instruction Set
   (iii) Site Blocking
   (iv) System
   (v) Database Controls
   (vi) Office Management Software
   (vii) Business Information System
   (viii) Electronic Fund Transfer (EFT)
   (ix) Database Management Systems (DBMS)
   (x) Business Strategy
2. Differentiate between the following:
   (i) Boxes and Diamonds in E-R Diagram
   (ii) Sales Process and Purchase to Pay (P2P) Process
   (iii) Random Access Memory (RAM) and Read Only Memory (ROM)
   (iv) Memory Management and Task Management in Operating System
   (v) Fat Client and Thin Client
   (vi) Session Layer and Transport Layer of OSI Model
   (vii) Knowledge Level Systems and Operational Level Systems
   (viii) General-purpose Planning languages and Special-purpose Planning languages
   (ix) Batch Processing and Online Processing
   (x) Attendance Systems and Vehicle Tracking System
3. Write short note on the following:
   (i) Extranets

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(ii) Mobile Commerce

(iii) Data Sharing in Grid Computing

(iv) Benefits of Business Process Automation (BPA)

(v) Android

(vi) Packet Switching in Switched Networks

(vii) Decentralized Computing

(viii) Data Resource Management Controls

(ix) File Management System

(x) Certificate Authority

BPM Life Cycle

4. Name and discuss various phases of Business Process Management Life Cycle (BPM Life Cycle) in logically correct order.

Control Objectives

5. Discuss Control and its objectives in detail.

Telecommunication Media

6. Discuss Transmission media in telecommunication networks.

Electronic Payments

7. What are the possible ways to make payments electronically?

Output Controls

8. Discuss Output Controls and their types under Application Controls.

Three Tier Architecture

9. Briefly explain all tiers in Three tier architecture.

Operating System

10. Discuss various activities that are performed by an Operating System.

Mobile Computing

11. Discuss Mobile Computing and its components.

e-Commerce

12. Discuss the risks involved in 'e-Commerce'.

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Office Automation Systems

13. Discuss some examples of Office Automation Systems.

Grid Computing

14. How Grid Computing is used from a user's perspective?

Flowchart

15. (a) Draw a flowchart to incorporate the following steps:

L1 N = 1

L2 PRINT N

L3 N = N x (N + 1)

L4 STOP when N exceeds 100

L5 GOTO L2

Note that is step L3, 'x' denotes multiplication sign.

(b) List the output for the above program.

(c) List the output if the above program is modified in the step L1 as N = 0.

SUGGESTED ANSWERS/HINTS

1. (i) Business Process Reengineering (BPR) Team: A BPR team is responsible to take the BPR project forward and make key decisions and recommendations. The BPR team includes active representatives from top management, business process owners, technical experts and users. The teams are of manageable size to ensure well-coordinated, effective and efficient completion of the entire BPR process.

(ii) Instruction Set: Instruction set is the set of machine code instructions that the processor can carry out CPU (Processor), the centre piece of the computer's architecture, is in charge of executing the instructions of the currently loaded program. Each processor has its own unique instruction set specifically designed to make best use of the capabilities of that processor. These Instruction Set tells the processor to carry out various calculations, to read and write values from and into the memory, and to conditionally jump to execute other instructions in the program.

(iii) Site Blocking: It is a software-based approach that prohibits access to certain websites that are deemed inappropriate by management. For example, sites that contain explicit objectionable material can be blocked to prevent employee's from

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accessing these sites from company Internet servers. In addition to blocking sites, companies can also log activities and determine the amount of time spent on the Internet and identify the sites visited.

(iv) **System:** The system can be defined as "a group of mutually related, cooperating elements with a defined boundary; working on reaching a common goal by taking inputs and producing outputs in organized transformation process." Not every system has a single goal and often a system contains several subsystems with sub goals, all contributing to meeting the overall system goal. For example, the finance, operations and marketing areas of an organization should all have goals which together help to achieve overall corporate objectives.

(v) **Database Controls:** The database subsystem is responsible for defining, creating, modifying, deleting, and reading data in an information system. It maintains declarative data, relating to the static aspects of real-world objects and their associations, and procedural data, relating to the dynamic aspects of real-world objects and their associations. Database Controls protect the integrity of a database when application software acts as an interface to interact between the user and the database.

(vi) **Office Management Software:** These applications help entities to manage their office requirements like word processors (MS Word), electronic spreadsheets (MS Excel), presentation software (PowerPoint), file sharing systems etc. The purpose is to automate the day-to-day office work and administration.

(vii) **Business Information System:** Business Information Systems (BIS) may be defined as systems integrating Information Technology, people and business. BIS bring business functions and information modules together for establishing effective communication channels which are useful for making timely and accurate decisions and in turn contribute to organizational productivity and competitiveness.

(viii) **Electronic Fund Transfer (EFT):** EFT represents the way the business can receive direct deposit of all payments from the financial institution to the company bank account. Once the user Signs Up, Money Comes to him directly and sooner than ever before. EFT is fast, safe, and means that the money will be confirmed in user's bank account quicker than if he had to wait for the mail, deposit the cheque, and wait for the funds to become available.

(ix) **Database Management Systems (DBMS):** DBMS are software that aid in organizing, controlling and using the data needed by the application programme. They provide the facility to create and maintain a well-organized database. Applications access the DBMS, which then accesses the data. Commercially

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available Data Base Management Systems are Oracle, My SQL, SQL Servers and DB2 etc.

(x) **Business Strategy:** At the highest level, the strategy of the company is specified, which describes its long-term concepts to develop a sustainable competitive advantage in the market. An example of a business strategy is cost leadership for products in a certain domain. Business Strategy determines goals to determine Operational and Organizational Business Processes to implement Business Processes.

2. **(i)** **Boxes in E-R Diagram:** Boxes are commonly used to represent entities. An entity may be a 'physical object' such as a house or a car, an 'event' such as a house sale or a car service, or a 'concept' such as a customer transaction or order. The entity is represented by a rectangle and labeled with a singular noun.

Diamonds in E-R Diagram: Diamonds are normally used to represent relationships. A relationship is an association that exists between two entities. For example, a Class is taught by Instructor. The relationships on an ER Diagram are represented by lines drawn between the entities involved in the association.

(ii) **Sales Process:** Sales covers all the business processes relating to fulfilling customer requests for goods or services. It involves transactional flow of data from the initial point of documenting a customer order to the final point of collecting the cash. The process involves the activities - Customer Order, Recording, Pick release, Shipping, Invoice, Receipt and Reconciliation.

P2P - Procure to Pay (Purchase to Pay or P2P): This cycle covers all the business processes relating to obtaining raw materials required for production of a product or for providing a service. It involves the transactional flow of data form the point of placing an order with a vendor to the point of payment to the vendor. Typical life cycle of P2P involves Purchase recognition, Request for quote, Quotation, Purchase order, Receipts and Payments.

(iii) **Random Access Memory (RAM):** This memory is volatile in nature which means Information is lost as soon as power is turned off. This is Read Write memory.

Read Only Memory (ROM): This is non-volatile in nature (contents remain even in absence of power). Usually, these are used to store small amount of information for quick reference by CPU. Information can be read not modified. Generally used by manufacturers to store data & programs like translators that is used repeatedly.

(iv) **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

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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 also allows more than one user to use the system i.e. timesharing.

(v) **Fat / Thick Client:** A **fat client** or **thick client** is a client that performs the bulk of any data processing operations itself, and does not necessarily rely on the server. Unlike thin clients, thick clients do not rely on a central processing server because the processing is done locally on the user system, and the server is accessed primarily for storage purposes. For that reason, thick clients often are not well-suited for public environments. To maintain a thick client, IT needs to maintain all systems for software deployment and upgrades, rather than just maintaining the applications on the server. For example – Personal Computer.

Thin Client: Thin clients use the resources of the host computer. A thin client generally only presents processed data provided by an application server, which performs the bulk of any required data processing. A thin client machine is going to communicate with a central processing server, meaning there is little hardware and software installed on the user's machine. A device using web application (such as Office Web Apps) is a thin client.

(vi) **Session Layer of OSI Model:** This layer sets up, coordinates, and terminates conversations, exchanges, and dialogs between the applications at each end. It deals with session and connection coordination. It provides for full-duplex, half-duplex, or simplex operation, and establishes check pointing, adjournment, termination, and restart procedures. The OSI model made this layer responsible for "graceful close" of sessions also.

Transport Layer of OSI Model: This layer ensures reliable and transparent transfer of data between user processes, assembles and disassembles message packets, and provides error recovery and flow control. Multiplexing and encryption are undertaken at this layer level. This means that the Transport Layer can keep track of the segments and retransmit those that fail.

(vii) **Knowledge-Level Systems:** These systems support discovery, processing and storage of knowledge and data workers. These further control the flow of paper work and enable group working. The users of these systems include knowledge and data workers who are selected, recruited and trained in a special manner than the non-

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knowledge workers. The knowledge resides in the heads of knowledge workers and these are the most precious resource an organization possesses.

Operational-Level Systems: These systems support operational managers tracking elementary activities that can include tracking customer orders, invoice tracking, etc. Operational-level systems ensure that business procedures are followed. The users include Operational Managers or supervisors that are responsible for the daily management of the line workers who produce the product or offer the service.

(viii) General-purpose planning languages: These allow users to perform many routine tasks, for example; retrieving various data from a database or performing statistical analyses. The languages in most electronic spreadsheets are good examples of general-purpose planning languages. These languages enable user to tackle abroad range of budgeting, forecasting, and other worksheet-oriented problems.

Special-purpose planning languages: These are more limited in what they can do, but they usually do certain jobs better than the general-purpose planning languages. Some statistical languages, such as Statistical Analysis System (SAS) and Statistical Package for the Social Science (SPSS) are examples of special purpose planning languages.

(ix) Batch Processing: It is defined as a processing of large set of data in a specific way, automatically, without needing any user intervention. The data is first collected, during a work day, for example, and then batch-processed, so all the collected data is processed in one go. This could happen at the end of the work day, for example, when computing capacities are not needed for other tasks. It is possible to perform repetitive tasks on large number of pieces of data rapidly without needing the user to monitor it. Batched jobs can take a long time to process. Batch processing is used in producing bills, stock control, producing monthly credit card statements, etc.

Online Processing: Data is processed immediately while it is entered, the user usually only has to wait a short time for a response. (Example: games, word processing, booking systems). Interactive or online processing requires a user to supply an input. Interactive or online processing enables the user to input data and get the results of the processing of that data immediately.

(x) Attendance Systems: Many attendance automation systems are available in the market that help entity to automate the process of attendance tracking and report generation. It has features such as supervisor login access, holiday pay settings, labour distribution, employee scheduling and rounding, employee view time card, overtime settings, battery-backed employee database and optional door/gate access control.

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Vehicle Tracking System: A lot of applications have been developed that allow entity to track their goods while in transit. Few applications are high end, allowing owner of goods to check the temperature of cold stored goods while in transit. It has features such as GPS based location, GPRS connection based real-time online data-logging and reporting, route accuracy on the fly while device is moving, real-time vehicle tracking, geo-fencing, SMS and e-mail notifications, over-the-air location query support, on-board memory to store location inputs during times when GPRS is not available or cellular coverage is absent.

3. (i) **Extranets:** Extranets are network links that use Internet technologies to interconnect the Intranet of a business with the Intranets of its customers, suppliers, or other business partners. Companies can use Extranets to perform following functions:

- Establish direct private network links between themselves, or create private secure Internet links between them called virtual private networks.
- Use the unsecured Internet as the extranet link between its intranet and consumers and others, but rely on encryption of sensitive data and its own firewall systems to provide adequate security.

(ii) **Mobile Commerce:** M-commerce (mobile commerce) is the buying and selling of goods and services through wireless handheld devices such as cellular telephone and personal digital assistants (PDAs). Also, known as next-generation e-commerce, m-commerce enables users to access the Internet without needing to find a place to plug in. Thus, m-commerce is all about the explosion of applications and services that are accessible from Internet-enabled mobile devices.

(iii) **Data Sharing in Grid Computing:** For small grids, the sharing of data can be easy, using existing networked file systems, databases, or standard data transfer protocols. As a grid grows and the users become dependent on any of the data storage repositories, the administrator should consider procedures to maintain backup copies and replicas to improve performance. All the resource management concerns apply to data on the grid.

(iv) Benefits of Business Process Automation (BPA) are as follows:

- **Saving on costs:** Automation leads to saving in time and labor costs.
- **Staying ahead in competition:** Today, in order to survive, businesses need to adopt automation.
- **Fast service to customers:** This was not the initial reason for adoption of BPA but gradually business managers realized that automation could help them to serve their customers faster and better.

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(v) **Android:** Android is a Linux-based operating system designed primarily for touch screen mobile devices such as smart phones and tablet computers. Android was built to enable developers to create compelling mobile applications that take full advantage of all a handset has to offer. Android powers devices from some of the best handset and tablet manufacturers in the world, like Samsung, HTC, Motorola, Sony, Asus and more. Android devices come in all shapes and sizes, with vibrant high-resolution displays and cameras, giving the flexibility to choose the one that's just right for a user. Android is an open source and the permissive licensing allows the software to be freely modified and distributed by device manufacturers, wireless carriers and enthusiast developers.

(vi) **Packet Switching in Switched Networks:** It is a sophisticated means of maximizing transmission capacity of networks. **Packet switching** refers to protocols in which messages are broken up into small transmission units called packets, before they are sent. Each packet is transmitted individually across the net. The packets may even follow different routes to the destination. Since there is no fixed path, different packets can follow different path and thus they may reach to destination out of order.

(vii) **Decentralized Computing:** Decentralized computing is the allocation of resources, both hardware and software, to each individual workstation, or office location. In contrast, centralized computing exists when most functions are carried out, or obtained from a remote centralized location. A collection of decentralized computers systems are components of a larger computer network, held together by local stations of equal importance and capability. These systems can run independently of each other. Decentralized systems enable file sharing and all computers can share peripherals such as printers and scanners as well as modems, allowing all the computers in the network to connect to the internet.

(viii) **Data Resource Management Controls:** Many organizations now recognize that data is a critical resource that must be managed properly and therefore, accordingly, centralized planning and control are implemented. For data to be managed better; users must be able to share data, data must be available to users when it is needed, in the location where it is needed, and in the form in which it is needed. Further it must be possible to modify data easily and the integrity of the data be preserved. If data repository system is used properly, it can enhance data and application system reliability. It must be controlled carefully, however, because the consequences are serious if the data definition is compromised or destroyed. Careful control should be exercised over the roles by appointing senior, trustworthy persons, separating duties to the extent possible and maintaining and monitoring logs of the data administrator's and database administrator's activities.

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(ix) **File Management System:** With increasing inventory of office files and records, many office automation systems are developed that allow office records to be kept in soft copy and easy tracking of the same. It has features such as web access, search, Microsoft office integration, records management software, electronic forms (e-forms), calendar, document version control, document scanning and imaging, check documents out/ check documents in, document "tagging" or metadata capture, virtual folders and document linking.

(x) **Certificate Authority:** It is critical to ensure the highest levels of security in a grid because the grid is designed to execute code and not just share data. Thus, viruses, Trojan horses, and other attacks cane affect the grid system. The Certificate Authority is one of the most important aspects of maintaining strong grid security. An organization may choose to use an external Certificate Authority or operate one itself. The primary responsibilities of a Certificate Authority are as follows:

- Positively identifying entities requesting certificates;
- Issuing, removing, and archiving certificates;
- Protecting the Certificate Authority server;
- Maintaining a namespace of unique names for certificate owners;
- Serving signed certificates to those needing to authenticate entities; and
- Logging activity.

4. **BPM Life Cycle (BPM-L Cycle):** An Enterprise Resource Planning (ERP) application divides BPM into the following phases:

(i) **Analysis phase:** This involves analysis of the current environment and current processes, identification of needs and definition of requirements.

(ii) **Design phase:** This involves evaluation of potential solutions to meet the identified needs, business process designing and business process modeling.

(iii) **Implementation phase:** This involves project preparation, blue printing, realization, final preparation, go live and support.

(iv) **Run and Monitor phase:** This involves business process execution or deployment and business process monitoring.

(v) **Optimize:** Iterate for continuous improvement.

5. Control is defined as policies, procedures, practices and organization structure that are designed to provide reasonable assurance that business objectives are achieved and undesired events are prevented or detected and corrected.

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Major control objectives are given as follows:

- **Authorization -** ensures that all transactions are approved by responsible personnel in accordance with their specific or general authority before the transaction is recorded.
- **Completeness -** ensures that no valid transactions have been omitted from the accounting records.
- **Accuracy -** ensures that all valid transactions are accurate, consistent with the originating transaction data and information is recorded in a timely manner.
- **Validity -** ensures that all recorded transactions fairly represent the economic events that occurred are lawful in nature, and have been executed in accordance with management's general authorization.
- **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 prompt corrective action and are reported to the appropriate level of management.
- **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.

6. Transmission Media in telecommunication networks connects the message source with the message receiver by means of **Guided Media** and **Unguided Media**.

- **Guided Media/Bound Media:** Guided Transmission Media uses a "cabling" system that guides the data signals along a specific path. Some of the common examples of guided media are Twisted Pair, Coaxial cable and Fiber optics.
  - **Twisted-Pair Wire:** Twisted-pair is ordinary telephone wire, consisting of copper wire twisted into pairs. It is the most widely used media for telecommunications and is used for both voice and data transmissions. It is used extensively in home and office telephone systems and many LANs and WANs.
  - **Coaxial Cable:** This telecommunications media consists of copper or aluminium wire wrapped with spacers to insulate and protect it. Coaxial cables can carry a large volume of data and allows high-speed data transmission used in high-service metropolitan areas for cable TV systems, and for short-distance connection of computers and peripheral devices. It is used extensively in office buildings and other work sites for local area networks.

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- **Fiber Optics:** This media consists of one or more hair-thin filaments of glass fiber wrapped in a protective jacket. Signals are converted to light form and fired by laser in bursts. Optical fibres can carry digital as well as analog signals and provides increased speed and greater carrying capacity than coaxial cable and twisted-pair lines.

♦ **Unguided Media/Unbound Media:** Unguided Transmission Media consists of a means for the data signals to travel but nothing to guide them along a specific path. The data signals are not bound to a cabling media. Some of the common examples of unguided media are Terrestrial Microwave, Radio waves, Micro Waves, Infrared Waves and Communications Satellites.

- **Terrestrial Microwave:** Terrestrial microwave media uses the atmosphere as the medium through which to transmit signals, and is used extensively for high-volume as well as long-distance communication of both data and voice in the form of electromagnetic waves.
- **Radio Waves:** Radio waves are an invisible form of electromagnetic radiation that varies in wavelength from around a millimeter to 100,000 km, making it one of the widest ranges in the electromagnetic spectrum. Radio waves are most commonly used transmission media in the wireless Local Area Networks.
- **Micro Waves:** Microwaves are radio waves with wavelengths ranging from as long as one meter to as short as one millimeter, or equivalently, with frequencies between 300 MHz (0.3 GHz) and 300 GHz. These are used for communication, radar systems, radio astronomy, navigation and spectroscopy.
- **Infrared Waves:** Infrared light is used in industrial, scientific, and medical applications. Night-vision devices using infrared illumination allow people or animals to be observed without the observer being detected.
- **Communication Satellites:** Communication satellites use the atmosphere (microwave radio waves) as the medium through which to transmit signals. A satellite is some solar-powered electronic device that receives, amplifies, and retransmits signals; the satellite acts as a relay station between satellite transmissions stations on the ground (earth stations). They are used extensively for high-volume as well as long-distance communication of both data and voice.

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7. Major ways to make payments electronically are as follows:

(i) **Credit Cards:** In a credit card transaction, the steps involved are authorization, batching, clearing and funding. The consumer presents preliminary proof of his ability to pay by presenting his credit card number to the merchant. The merchant can verify this with the bank, and create a purchase slip for the consumer to endorse. The merchant then uses this purchase slip to collect funds from the bank, and, on the next billing cycle, the consumer receives a statement from the bank with a record of the transaction.

(ii) **Electronic Cheque:** Credit card payments are popular for commerce on the Internet. However, FSTC and CyberCash are two systems that let consumers use electronic cheques to pay Web merchants directly. Financial Services Technology Corporation (FSTC) is a consortium of banks and clearing houses that has designed an electronic cheque that is initiated electronically, and uses a digital signature for signing and endorsing. By CyberCash**,** electronic cheque functions as a message to the sender's bank to transfer funds, and, like a paper cheque, the message is given initially to the receiver who, in turn, endorses the cheque and presents it to the bank to obtain funds.

(iii) **Smart Cards:** Smart cards are any pocket sized card with embedded integrated circuits. Smart cards can provide identification authentications, data storage and application processing. Smart cards may serve as a credit or ATM cards, Fuel cards, mobile phone SIMs, access-control cards, public transport or public phone payment cards etc. on the card. Contact cards, Contactless cards and Combi/Hybrid Cards are the three types of Smart Cards.

(iv) **Electronic Purses:** Electronic Purse Card is very similar to a pre-paid card. Bank issues a stored value card to its customer, the customer can then transfer value from his/her account to the card at an ATM, a personal computer, or a specially equipped telephone. While making purchases, customers pass their cards through a vendor's Point of Sale terminal. Validation is done through a Personal Identification Number (PIN Number). Once the transaction is complete, funds are deducted directly from the cards and transferred to the vendor's terminal. When the value on a card is spent, consumers can load additional funds from their accounts to the card.

8. **Output Controls:** Output controls ensure that the data delivered to users will be presented, formatted and delivered in a consistent and secured manner. Whatever the type of output, it should be ensured that the confidentiality and integrity of the output is maintained and that the output is consistent. Output controls have to be enforced both in a batch-processing environment as well as in an online environment.

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- **Storage and Logging of Sensitive and Critical Forms:** Pre-printed stationery should be stored securely to prevent unauthorized destruction or removal and usage. Only authorized persons should be allowed access to stationery supplies such as security forms, negotiable instruments etc.
- **Logging of Output Program Executions:** When programs, used for output of data, are executed, they should be logged and monitored.
- **Controls over Printing:** It should be ensured that unauthorized disclosure of information printed is prevented.
- **Report Distribution and Collection Controls:** Distribution of reports should be made in a secure way to avoid unauthorized disclosure of data. A log should be maintained as to what reports were generated and to whom it was distributed.
- **Retention Controls:** Retention controls consider the duration for which outputs should be retained before being destroyed. Consideration should be given to the type of medium on which the output is stored.
- **Existence/Recovery Controls:** These controls are needed to recover output in the event that it is lost or destroyed. If the output is written to a spool of files or report files and has been kept, then recovery is easy and straight-forward.

9. The three tiers in Three-tier architecture are as follows:

- **Presentation Tier:** This tier occupies the top level, communicates with other tiers and displays information related to services available on a website.
- **Application Tier:** Also, called the Middle tier, Logic tier, Business Logic or Logic tier; this tier controls application functionality by performing detailed processing.
- **Database Tier:** This tier houses the database servers where information is stored and retrieved. Data in this tier is kept independent of application servers or business logic.

10. List of activities that are executed by Operating systems include the following:

- **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 that 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. DOS has a Command based User Interface (UI) i.e. text commands were given to computer to execute any command, whereas Windows has Graphic User Interface (GUI) which uses icons & menus.

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- **Hardware Independence:** Every computer could have different specifications and configurations of hardware. Operating system 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 control how memory is accessed and maximizes available memory & storage. Operating systems also provides Virtual Memory by carving an area of hard disk to supplement the functional memory capacity of 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. timesharing.
- **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 of where each file is stored and who can access it, based on which it provides the file retrieval.

11. **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.

    Mobile computing involves **Mobile Communication**, **Mobile Hardware** and **Mobile Software**; which are discussed as follows:

    - **Mobile Communication:** 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. The data format is also defined at this stage. The signals are carried over the air to intended devices that are capable of receiving and sending similar kind of signals. It will incorporate all aspects of wireless communication.

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- **Mobile Hardware:** Mobile Hardware 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 can send and receiving signals. These devices are configured to operate in full- duplex, whereby they can send and receive signals at the same time.
- **Mobile Software:** Mobile Software is the actual program that runs on the mobile hardware. It deals with the characteristics and requirements of mobile applications. This is the engine of that mobile device. In other terms, it is the operating system of that appliance. It is the essential component that makes the mobile device operates.

12. Risks involved in e-Commerce are as follows:

- **Problem of anonymity:** There is need to identify and authenticate users in the virtual global market where anyone can sell to or buy from anyone, anything from anywhere.
- **Repudiation of contract:** There is possibility that the electronic transaction in the form of contract, sale order or purchase by the trading partner or customer may be denied.
- **Lack of authenticity of transactions:** The electronic documents that are produced in the course of an e-Commerce transaction may not be authentic and reliable.
- **Data Loss, Theft or Duplication:** The data transmitted over the Internet may be lost, duplicated, tampered with or replayed.
- **Attack from hackers:** Web servers used for e-Commerce may be vulnerable to hackers.
- **Denial of Service:** Service to customers may be denied due to non-availability of system as it may be affected by viruses, e-mail bombs and floods.
- **Non-recognition of electronic transactions:** e-Commerce transactions as electronic records and digital signatures may not be recognized as evidence in courts of law.
- **Lack of audit trails:** Audit trails in e-Commerce system may be lacking and the logs may be incomplete, too voluminous or easily tampered with.
- **Problem of piracy:** Intellectual property may not be adequately protected when such property is transacted through e-Commerce.

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13. Some examples of Office Automation Systems are as follows:

Application	Description
Word Processing	Use of a computer to perform automatically many of the tasks necessary to prepare typed or printed documents.
Electronic mail	Use of a computer network that allows users to send, store and retrieve messages using terminals and storage devices.
Voice Mail	Requires computers with an ability to store audio messages digitally and convert them back upon retrieval.
Electronic Calendaring	Use of a networked computer to store and retrieve a manager's appointment calendar. Allows other managers' calendars to be accessed and facilitates scheduling.
Video Conferencing	Use of television equipment to link geographically dispersed conference participants.
Desktop Video Conferencing	Video and audio equipment are attached to each workstation in the network enabling the two-way communication of picture and way communication of picture and sound.
FAX	Uses special equipment that can read a document at one end of a communication channel and make a copy at the other end.
Imaging	Uses Optical Character Recognition (OCR) to convert data on paper to a digital format for storage in a secondary storage device.
Desktop Publishing	Uses a computer to prepare output that is very close in quality to that produced by a typesetter.

14. To use Grid Computing, a user's perspective is as follows:

- **Enrolling and installing Grid Software:** A user may first have to enroll his machine as a donor on the grid and install the provided grid software on his own machine that may require authentication for security purposes. The user positively establishes his identity with a Certificate Authority who must take steps to assure that the user is in fact who he claims to be. Once the user and/or machine are authenticated, the grid software is provided to the user for installing on his machine for the purposes of using the grid as well as donating to the grid.

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- **Logging onto the grid:** Most grid systems require the user to log on to a system using an ID that is enrolled in the grid. Once logged on, the user can query the grid and submit jobs. Some grid implementations permit some query functions if the user is not logged into the grid or even if the user is not enrolled in the grid.
- **Queries and submitting jobs:** The user will usually perform some queries to check to see how busy the grid is, to see how his submitted jobs are progressing, and to look for resources on the grid. Grid systems usually provide command-line tools as well as graphical user interfaces (GUIs) for queries. Job submission usually consists of three parts, even if there is only one command required.
    - First, some input data and possibly the executable program or execution script file are sent to the machine to execute the job.
    - Second, the job is executed on the grid machine. The grid software running on the donating machine executes the program in a process on the user's behalf.
    - Third, the results of the job are sent back to the submitter.
- **Data configuration:** The data accessed by the grid jobs may simply be staged in and out by the grid system. However, depending on its size and the number of jobs, this can potentially add up to a large amount of data traffic. For example, if there will be a very large number of sub-jobs running on most of the grid systems for an application that will be repeatedly run, the data they use may be copied to each machine and reside until the next time the application runs. This is preferable to using a networked file system to share this data, because in such a file system, the data would be effectively moved from a central location every time the application is run. This type of analysis is necessary for large jobs to better utilize the grid and not create unnecessary bottlenecks.
- **Monitoring progress and recovery:** The user can query the grid system to see how his application and its sub-jobs are progressing. When the number of sub-jobs becomes large, it becomes too difficult to list them all in a graphical window. Instead, there may simply be one large bar graph showing some averaged progress metric. It becomes more difficult for the user to tell if any particular sub-job is not running properly. A grid system, in conjunction with its job scheduler, often provides some degree of recovery for sub-jobs that fail. A job may fail due to a Programming error, Hardware or power failure, Communications interruption, and Excessive slowness due to infinite loop or some other form of contention.
- **Reserving resources:** To improve the quality of a service, the user may arrange to reserve a set of resources in advance for his exclusive or high-priority use. Such a reservation system can also be used in conjunction with planned hardware or software maintenance events, when the affected resource might not be available for grid use.

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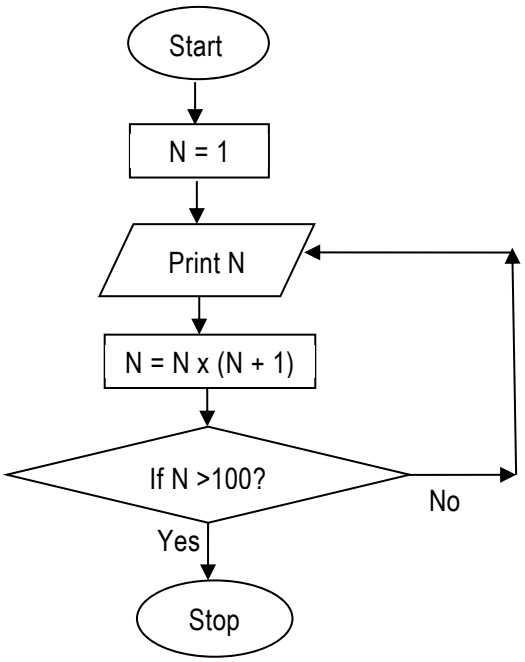
15. (a) Let us define the variable first:

N: Number

The desired flowchart is as follows:



(b) The output for the above program is as follows:

1

2

6

42

(c) The output of the above program in case N is initialized as 0 will be -

0, 0, 0, 0, 0 …… (infinite loop)

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SECTION – B: STRATEGIC MANAGEMENT

Correct/Incorrect with reasoning

1. State with reasons which of the following statements are correct/incorrect:
   (a) The first step of strategy formulation in strategic management model is to undertake internal analysis.
   (b) Vertical diversification integrates firms forward or backward in the product chain.
   (c) Growth share matrix is popularly used for resource allocation.
   (d) The term PESTLE is used to describe a framework for analysis of macro environmental factors.
   (e) Key success factors are constant for all industries.
   (f) Benchmarking is a process of one-time improvement in search for competitive advantage.
   (g) In hourglass structure, more personnel are required at middle levels for effective functioning.
   (h) Production strategy implements, supports and drives higher strategies.
   (i) Changes in strategy may lead to changes in organizational structure.
   (j) Strategic management is not needed in not-for-profit organisations.

Differences between the two concepts

2. Distinguish between the following:
   (a) Forward integration and backward integration.
   (b) DMAIC and DMADV methodology of six sigma.
   (c) Transformational leadership style and Transactional leadership style.
   (d) Logistic management and Supply chain management.

Short notes

3. Write short notes on the following:
   (a) Characteristics of a Global Company.
   (b) Importance of Strategic Management.
   (c) Strategic groups.
   (d) Need for Turnaround Strategy.

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Brief answers

4. Briefly answer the following questions:

   (a) What does the concept of 'question marks' in the context of BCG Growth-share matrix signify? What strategic options are open to a business firm which has some 'question marks' in the portfolio of its businesses?

   (b) Determining an appropriate mix of debt and equity in a firm's capital structure can be vital to successful strategy implementation'. Discuss.

   (c) 'A network structure is suited to unstable environment.' Elaborate.

Descriptive answers

Chapter 1-Business Environment

5. What do you mean by micro environment of business? Explain its elements.

6. What are the strategic responses of an organization to its environment? Explain.

Chapter 2-Business Policy and Strategic Management

7. How strategic decisions differ in nature from other routine decisions taken in day-today working of an organization? Explain.

8. 'Organizations sustain superior performance over a long period of time, in spite of the rapid changes taking place continually in its competitive environment if they implement strategic management successfully.' Discuss.

Chapter 3-Strategic Analysis

9. A pharmaceutical company wants to grow its business. Draw Ansoff's Product Market Growth Matrix to advise them of the available options.

10. Explain the significance of SWOT analysis.

Chapter 4-Strategic Planning

11. Explain briefly following areas on which the strategic planners concentrate to achieve the long term prosperity:

    (i) Profitability

    (ii) Competitive position

    (iii) Employee development

    (iv) Public responsibility

12. Michael Porter has suggested three generic strategies. Explain them with examples.

Chapter 5-Formulation of Functional Strategy

13. What are the objectives that must be kept in mind while designing a pricing strategy of a new product?

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14. Discuss the broad areas in which Functional Strategies of a business organization is carried out.

Chapter 6-Strategic Implementation and Control

15. Describe the concept of corporate culture. Elaborate the problems that business houses are facing while changing their culture to remain adaptive with the globally changing scenario.

16. ABC Ltd. plans to introduce changes in its structure, technology and people. Explain how Kurt Lewin's change process can help this firm.

Chapter 7-Reaching Strategic Edge

17. Define Business Process Re-engineering. Briefly outline the steps therein.

18. Explain in brief, how E-commerce environment has affected the business?

SUGGESTED ANSWERS / HINTS

1 (a) Incorrect: Identifying an organisation's existing vision, mission, objectives, and strategies is the starting point for any strategic management process because an organisation's existing situation and condition may preclude certain strategies and may even dictate a particular course of action. Determining vision and mission provides long-term direction, delineate what kind of enterprise the company is trying to become and infuse the organisation with a sense of purposeful action.

(b) Correct: In vertically integrated diversification, firms opt to engage in businesses that are related to the existing business of the firm. It moves forward or backward in the chain and enters specific product with the intention of making them part of new businesses for the firm.

(c) Correct: Growth share matrix also known for its cow and dog metaphors is popularly used for resource allocation in a diversified company. Primarily it categorises organisations/products on the basis two factors consisting of the growth opportunities and the market share enjoyed.

(d) Correct: The term PESTLE is used to describe a framework for analysis of macro environmental factors. PESTLE analysis involves identifying the political, economic, socio-cultural, technological, legal and environmental influences on an organization and providing a way of scanning the environmental influences that have affected or are likely to affect an organization or its policy.

(e) Incorrect: Key success factors vary from industry to industry and even from time to time within the same industry as driving forces and competitive conditions change. Rarely an industry has more than three or four key success factors at any one time. And even among these three or four, one or two usually outrank the others in

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importance. Managers, therefore, have to resist the temptation to include factors that have only minor importance. To compile a list of every factor that matters even a little bit defeats the purpose of concentrating management attention on the factors truly critical to long-term competitive success.

(f) **Incorrect:** Benchmarking is a process of continuous improvement in search for competitive advantage. Firms can use benchmarking process to achieve improvement in diverse range of management function like maintenance operations, assessment of total manufacturing costs, product development, product distribution, customer services, plant utilisation levels and human resource management.

(g) **Incorrect:** Hourglass organization structure consists of three layers with constricted middle layer. The structure has a short and narrow middle-management level. Information technology links the top and bottom levels in the organization taking away many tasks that are performed by the middle level managers. A shrunken middle layer coordinates diverse lower level activities.

(h) **Correct:** For effective implementation of higher level strategies, strategists need to provide direction to functional managers, including production, regarding the plans and policies to be adopted. Production strategy provides a path for transmitting corporate and business level strategy to the production systems and makes it operational. It may relate to production planning, operational system, control and research & development.

(i) **Correct:** Changes in strategy may require changes in structure as the structure dictates how resources will be allocated. Structure should be designed to facilitate the strategic pursuit of a firm and, therefore, should follow strategy. Without a strategy or reasons for being, companies find it difficult to design an effective structure.

(j) **Incorrect** – Strategic management applies equally to profit as well as not-for-profit organizations. Though not-for-profit organizations are not working for the profit, they have to have purpose, vision and mission. They also work within the environmental forces and need to manage strategically to stay afloat to accomplish their objectives. For the purpose of continuity and meeting their goals, they also need to have and manage funds and other resources just like any other for-profit-organization.

2. **(a)** Forward and backward integration forms part of vertically integrated diversification. In vertically integrated diversification, firms opt to engage in businesses that are vertically related to the existing business of the firm. The firm remains vertically within the same process. While diversifying, firms opt to engage in businesses that are linked forward or backward in the chain and enters specific product/process steps with the intention of making them into new businesses for the firm.

Backward integration is a step towards creation of effective supply by entering business of input providers. Strategy employed to expand profits and gain greater control over production of a product whereby a company will purchase or build a

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business that will increase its own supply capability or lower its cost of production. On the other hand, forward integration is moving forward in the value chain and entering business lines that use existing products. Forward integration will also take place where organisations enter into businesses of distribution channels.

(b) For implementing six sigma, there are two separate key methodologies for existing and new processes. They are known as DMAIC and DMADV.

DMAIC is an acronym for five different steps used in six sigma - Define, Measure, Analyze Improve, and Control. DMAIC methodology is directed towards improvement of existing product, process or service.

- Define: To begin with six sigma experts define the process improvement goals that are consistent with the strategy of the organization and customer demands. They discuss different issues with the senior managers so as to define what needs to done.
- Measure: The existing processes are measured to facilitate future comparison. Six sigma experts collect process data by mapping and measuring relevant processes.
- Analyze: Verify cause-and-effect relationship between the factors in the processes. Experts need to identify the relationship between the factors. They have to make a comprehensive analysis to identify hidden or not so obvious factor.
- Improve: On the basis of the analysis experts make a detailed plan to improve.
- Control: Initial trial or pilots are run to establish process capability and transition to production. Afterwards continuously measure the process to ensure that variances are identified and corrected before they result in defects.

DMADV is an acronym for Define, Measure, Analyze, Design, and Verify. DMADV is a strategy for designing new products, processes and services.

- Define: As in case of DMAIC six sigma experts have to formally define goals of the design activity that are consistent with strategy of the organization and the demands of the customer.
- Measure: Next identify the factors that are critical to quality (CTQs). Measure factors such as product capabilities and production process capability. Also assess the risks involved.
- Analyze: Develop and design alternatives. Create high-level design and evaluate to select the best design.
- Design: Develop details of design and optimise it. Verify designs may require using techniques such as simulations.

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- Verify: Verify designs through simulations or pilot runs. Verified and implemented processes are handed over to the process owners.

However, in spite of different orientation in two methodologies, conceptually there is overlapping between the DMAIC and DMADV as both are essentially having similar objectives.

(c) Difference between transformational and transactional leadership

1. Transformational leadership style uses charisma and enthusiasm to inspire people to exert them for the good of organization. Transactional leadership style uses the authority of its offices to exchange rewards such as pay, status, etc.
2. Transformational leadership style may be appropriate in turbulent environment, in industries at the very start or end of their cycles, poorly performing organisations, when there is a need to inspire a company to embrace major changes. Transactional leadership style can be appropriate in settled environment, in growing or mature industries and in organisations that are performing well.
3. Transformational leaders inspire employees by offering the excitement, vision, intellectual stimulation and personal satisfaction. Transactional leaders prefer a more formalized approach to motivation, setting clear goals with explicit rewards or penalties for achievement and non-achievement. Transactional leaders focus mainly to build on existing culture and enhance current practices.

(d) Supply chain management is an extension of logistic management. However, there are differences between the two. Logistical activities typically include management of inbound and outbound goods, transportation, warehousing, handling of material, fulfillment of orders, inventory management and supply/demand planning. Although these activities also form part of supply chain management, the latter is much broader. Logistic management can be termed as one of its part that is related to planning, implementing, and controlling the movement and storage of goods, services and related information between the point of origin and the point of consumption.

Supply chain management is an integrating function of all the major business activities and business processes within and across organisations. Supply Chain Management is a systems view of the linkages in the chain consisting of different channel partners – suppliers, intermediaries, third-party service providers and customers. Different elements in the chain work together in a collaborative and coordinated manner. Often it is used as a tool of business transformation and involves delivering the right product at the right time to the right place and at the right price.

3. (a) In simple economic terms, globalization refers to the process of integration of world into one huge market. At the company level, globalization means two things: (a) the company commits itself heavily with several manufacturing locations around the world

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and offers products in several diversified industries and (b) it also means ability to compete in domestic markets with foreign competitors.

The global company views the world as one market minimizing the importance of national boundaries. A global company has three attributes:

(i) It is a conglomerate of multiple units located in different parts of the globe but all linked with common ownership.

(ii) Multiple units draw a common pool of resources such as money, credit, patents, trade name, etc.

(iii) The units respond to common strategy.

(b) Importance of Strategic Management: Strategic Management is very important for the survival and growth of business organizations in dynamic business environment. Other major benefits of strategic management are as follows:

- It helps organizations to be more proactive rather than reactive in dealing with its future. It facilitates the organisations to work within vagaries of environment and remains adaptable with the turbulence or uncertain future. Therefore, they are able to control their own destiny in a better way.
- It provides better guidance to entire organization on the crucial point – what it is trying to do. Also provides framework for all major business decisions of an enterprise such a decision on businesses, products, markets, organization structures, etc.
- It facilitates to prepare the organization to face the future and act as pathfinder to various business opportunities. Organizations are able to identify the available opportunities and identify ways and means as how to reach them.
- It serves as a corporate defence mechanism against mistakes and pitfalls. It helps organizations to avoid costly mistakes in product market choices or investments.
- Over a period of time, strategic management helps organizations to evolve certain core competencies and competitive advantages that assist in the fight for survival and growth.

(c) Strategic groups are clusters of competitors that share similar strategies and therefore compete more directly with one another than with other firms in the same industry. Strong economic compulsions often constrain these firms from switching one competitive posture to another. An industry contains only one strategic group when all firms essentially have identical strategies and have comparable market positions. At the other extreme, there are as many strategic groups as there are competitors when each rival pursues a distinctively different competitive approach and occupies a substantially different competitive position in the market place.

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(d) Turnaround is needed when an enterprise's performance deteriorates to a point that it needs a radical change of direction in strategy, and possibly in structure and culture as well. It is a highly targeted effort to return an organization to profitability and increase positive cash flows to a sufficient level. It is used when both threats and weaknesses adversely affect the health of an organization so much that its basic survival is difficult.

The overall goal of turnaround strategy is to return an underperforming or distressed company to normalcy in terms of acceptable levels of profitability, solvency, liquidity and cash flow. To achieve its objectives, turnaround strategy must reverse causes of distress, resolve the financial crisis, achieve a rapid improvement in financial performance, regain stakeholder support, and overcome internal constraints and unfavourable industry characteristics.

4. (a) The BCG growth-share matrix is the simplest way to portray a corporation's portfolio of investments. Using the matrix, organisations can identify four different types of products or Strategic Business Units. *Question Marks,* sometimes called problem children or wildcats, are low market share businesses in high-growth markets.

They require a lot of cash to hold their share. They need heavy investments with low potential to generate cash. Question marks if left unattended are capable of becoming cash traps. Since growth rate is high, increasing it should be relatively easier.

It is for business organisations to turn those businesses into stars and then to cash cows when the growth rate reduces. *Thus the strategic option that they must strive to achieve is to build.* Here the objective is to increase market share, even by forgoing short-term earnings in favour of building a strong future with large market share.

(b) Successful strategy implementation often requires additional capital. Besides net profit from operations and the sale of assets, two basic sources of capital for an organization are debt and equity. Fixed debt obligations generally must be met, regardless of financial or operating performance. This does not mean that equity issuances are always better than debt for raising capital. If ordinary stock is issued to finance strategy implementation; ownership and control of the enterprise gets diluted. This can be a serious concern in today's business environment of hostile takeovers, mergers, and acquisitions.

The major factors regarding which strategies have to be made by a financial manager are: capital structure; procurement of capital and working capital borrowings; reserves and surplus as sources of funds; and relationship with lenders, banks and financial institutions. Strategies related to the sources of funds are important since they determine how financial resources will be made available for the implementation of strategies. Organizations have a range of alternatives regarding the sources of funds. While one company may rely on external borrowings, another may follow a policy of internal financing.

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(c) Network structure is a newer and somewhat more radical organizational design. The network structure could be termed a "non-structure" as it virtually eliminates in-house business functions and outsource many of them. An organisation organized in this manner is often called a virtual organization because it is composed of a series of project groups or collaborations linked by constantly changing non-hierarchical, cobweb-like networks. The network structure becomes most useful when the environment of a firm is unstable and is expected to remain so. Under such conditions, there is usually a strong need for innovation and quick response. Instead of having salaried employees, it may contract with people for a specific project or length of time. Long-term contracts with suppliers and distributors replace services that the company could provide for itself.

5. The environment of business can be categorised into two broad categories micro-environment and macro-environment. Micro-environment is related to small area or immediate periphery of an organization. Micro-environment influences an organization regularly and directly. Developments in the micro environment have direct impact on the working of organizations. Micro environment includes the company itself, its suppliers, marketing intermediaries, customer markets and competitors. The elements of micro environment are specific to the said business and affects its working on short term basis.

- **Consumers / Customers:** Customers who may or may not be consumers are the people who pay money to acquire organisational products and services. Consumer is the one who ultimately consumes or uses the product or services. The marketer has to closely monitor and analyse the changes in the consumer tastes and preferences and their buying habits. Consumer occupies the central position in the market.
- **Competitors:** Competitors are the other business entities that compete for resources as well as markets. A study of the competitive scenario is essential for the marketer, particularly threats from competition.
- **Organization:** Individuals occupying different positions or working in different capacities in organizations consists of individuals who come from outside. They have different and varied interests. An organization has several non-specific elements in form of individuals and groups that may affect its activities. Owners, board of directors and employees form part of organisation.
- **Market:** The market is larger than customers. The market is to be studied in terms of its actual and potential size, its growth prospect and also its attractiveness. The marketer should study the trends and development and the key success factors of the market.
- **Suppliers:** Suppliers form an important component of the micro environment. The suppliers provide raw materials, equipment, services and so on. Suppliers with their own bargaining power affect the cost structure of the industry. They constitute a major force, which shapes competition in the industry.

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- **Market Intermediaries:** Intermediaries bridge the gap between the organisations and customers. They are in form of stockist, wholesalers and retailers. They exert considerable influence on the business organizations. In many cases the consumers are not aware of the manufacturer of the products they buy. They buy product from the local retailers or big departmental stores.

6. A business organization and its many environments have in numerous interrelationship. It is difficult to determine exactly what the business organisation should do in response to a particular situation in the environment. Strategically, the business organisations should make efforts to exploit the opportunities and avoid the threats.

In this context, following are the possible strategic responses of an organisation to its business environment:

(i) **Least resistance:** Some organisations just manage to survive by way of coping with their changing external environments. They are simple goal-maintaining units. They are very passive in their behaviour and are solely guided by the signals of the external environment. They are not ambitious but are content with taking simple paths of least resistance in their goal-seeking and resource transforming behaviour.

(ii) **Proceed with caution:** At the next level, are the organisations that take an intelligent interest to adapt with the changing external environment. They seek to monitor the changes in that environment, analyse their impact on their own goals and activities and translate their assessment in terms of specific strategies for survival, stability and strength. This is a sophisticated strategy than to wait for changes to occur and then take corrective-adaptive action.

(iii) **Dynamic response:** At a still higher sophisticated level, are those organisations that regard the external environmental forces as partially manageable and controllable by their actions. Their feedback systems are highly dynamic and powerful. They not merely recognise and ward off threats; they convert threats into opportunities. They are highly conscious and confident of their own strengths and the weaknesses of their external environmental 'adversaries'. They generate a contingent set of alternative courses of action to be picked up in tune with the changing environment.

7. Strategic decisions are different in nature than all other decisions which are taken at various levels of the organization during day-to-day working of the organizations. The major dimensions of strategic decisions are given below:

- Strategic issues require top-management decisions.
- Strategic issues involve the allocation of large amounts of company resources.
- Strategic issues are likely to have a significant impact on the long term prosperity of the firm.
- Strategic issues are future oriented.
- Strategic issues usually have major multifunctional or multi-business consequences.
- Strategic issues necessitate consideration of factors in the firm's external environment.

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8. Business organizations function within dynamic environment. The environment may vary from being conducive to hostile. Whatever be the conditions, implementation of strategic management is very important for the survival and growth of business organizations. Strategy implementation helps in improving the competence with which it is executed and helps organizations to sustain superior performance in following manner:

- Strategic management helps organizations to be more proactive rather than reactive in dealing with its future.
- It provides better guidance to entire organization on the crucial point – what it is trying to do.
- It facilitates to prepare the organization to face the future. Organizations are able to identify the available opportunities and identify ways and means as how to reach them.
- It serves as a corporate defense mechanism against mistakes and pitfalls.
- Over a period of time strategic management helps organization to evolve certain core competencies and competitive advantages.

9. The Ansoff's product market growth matrix (proposed by Igor Ansoff) is a useful tool that helps businesses decide their product and market growth strategy. With the use of this matrix a business can get a fair idea about how its growth depends upon it markets in new or existing products in both new and existing markets.

The Ansoff's product market growth matrix is as follows:

	Existing Products	**New Products**
Existing Markets	Market Penetration	Product Development
New Markets	Market Development	Diversification

Based on the matrix, A may segregate its different products. Being in pharmaceuticals, development of new products is result of extensive research and involves huge costs. There are also social dimensions that may influence the decision of the company. It can adopt penetration, product development, market development or diversification simultaneously for its different products.

Market penetration refers to a growth strategy where the business focuses on selling existing products into existing markets. It is achieved by making more sales to present customers without changing products in any major way. Market development refers to a growth strategy where the business seeks to sell its existing products into new markets. It is a strategy for company growth by identifying and developing new markets for current company products. Product development is refers to a growth strategy where business aims to introduce new products into existing markets. It is a strategy for company growth by offering modified or new products to current markets. Diversification refers to a growth strategy where a business markets new products in new markets. It is a strategy by starting up or acquiring businesses outside the company's current products and markets.

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As market conditions change overtime, a company may shift product-market growth strategies. For example, when its present market is fully saturated a company may have no choice other than to pursue new market.

10. An important component of strategic thinking requires the generation of a series of strategic alternatives, or choices of future strategies to pursue, given the company's internal strengths and weaknesses and its external opportunities and threats. The comparison of strengths, weaknesses, opportunities, and threats is normally referred to as SWOT analysis. SWOT analysis helps managers to craft business model that will allow a company to gain a competitive advantage. Key reasons for SWOT analyses are:

- It provides a logical framework for systematic identification of issues having bearing on the business situation, generation of alternative strategies and the choice of a strategy.
- It presents a comparative account of both external and internal environment in a structured form where it is possible to compare external opportunities and threats with internal strengths and weaknesses.
- It guides the strategist in strategy identification. It guides the strategist to think of overall position of the organization that helps to identify the major purpose of the strategy under focus.

11. Following are the areas on which the strategic planners concentrate to achieve the long term prosperity:

(i) **Profitability:** The ability of an organization to operate in the long run depends on achieving an adequate level of profits. These profits usually expressed in terms of earnings per share or return on equity.

(ii) **Competitive position:** The method of knowing the organization's success is based on the relative dominance of an organization in the market place. Organizations commonly establish an objective in terms of competitive position, using total sales or market place as measures of their competitive position.

(iii) **Employee development:** Providing employee value education and training leads to increased compensation and job security. Providing such opportunities often increases productivity and decreases turnover.

(iv) **Public responsibility:** Managers recognize their responsibilities towards their customers and to society at large. Many organizations work not only to develop reputations for fairly priced products and services but also to establish themselves as responsible corporate citizens.

12. The basic purpose of following a generic strategy is to gain competitive advantage so as to ensure long-time survival and growth. According to Porter, strategies allow organizations to gain competitive advantage from three different bases: cost leadership, differentiation, and focus. These bases form different generic strategies as follows:

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- **Cost leadership** emphasizes producing standardized products at a very low per-unit cost for consumers who are price-sensitive. It frequently results from productivity increases and aggressive pursuit of cost reduction throughout the development, production, marketing, and distribution processes. It allows a firm to earn higher profits than its competitors. For example, car manufacturers Maruti and Hyundai work on reducing their costs to sell their cars in popular segment at attractive prices.
- **Differentiation** is a strategy aimed at producing products and services considered unique industry wide and directed at consumers who are relatively price-insensitive. It concerns with distinguishing a product/service from that of its competitors through unique design features, technological leadership, unique uses of products and attributes like quality, environmental impact and customer service. For example, Apple brings out mobile phone with distinct features.
- **Focus** means producing products and services that fulfil the specific needs of small groups of consumers. It involves selecting or focusing a market or customer segment in which to operate. For example, Nestle KitKat targeting on teenagers and young adults or Johnson and Johnson having host of products such as cream, shampoo, brushes for infants and young babies.

13. For a new product pricing strategies for entering a market needs to be designed. In pricing a really new product at least three objectives must be kept in mind.

i. Making the product acceptable to the customers.

ii. Producing a reasonable margin over cost.

iii. Achieving a market that helps in developing market share.

For a new product an organization may either choose to skim or penetrate the market. In skimming prices are set at a very high level. The product is directed to those buyers who are relatively price insensitive but sensitive to the novelty of the new product. For example call rates of mobile telephony were set very high initially. Even the incoming calls were charged. Since the initial off take of the product is low, high price, in a way, helps in rationing of supply in favour of those who can afford it.

In penetration pricing firm keeps a temptingly low price for a new product which itself is selling point. A very large number of the potential customers may be able to afford and willing to try the product.

14. Once higher level corporate and business strategies are developed, management need to formulate and implement strategies for each functional area. Functional strategies provide details to business strategy & governs as to how key activities of the business are to be managed. Functional area strategy include marketing, financial, production and human resource management are based on the functional capabilities of an organisation.

i. **Marketing:** Marketing is considered to be activities related to identifying the needs of customers and taking such actions to satisfy them in return of some consideration.

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ii. **Finance:** Financial strategies are related to several finance and accounting concepts considered to be central to strategy implementation.

iii. **Production:** The strategy for production is related to the production system, operational planning and control, and research and development.

iv. **Logistics:** Logistics integrates the flow of supplies into, through and out of an organization to achieve a level of service to ensure availability of right materials at right place, at right time in right quality and at right cost.

v. **Research and Development:** R&D strategy is designed to match external opportunities to internal strengths to achieve organisational objectives.

vi. **Human Resource Development:** Human resource strategy is designed to develop employees, provide them suitable opportunities and proper working conditions so as to ensure their optimal contribution.

15. The phenomenon which often distinguishes good organizations from bad ones could be summed up as 'corporate culture'. Corporate culture refers to a company's values, beliefs, business principles, traditions, and ways of operating and internal work environment. Every corporation has a culture that exerts powerful influences on the behaviour of managers. Culture affects not only the way managers behave within an organization but also the decisions they make about the organization's relationships with its environment and its strategy.

Changing a company's culture to align it with strategy is among the toughest management tasks-easier to talk about than do. Changing culture and making it to remain adaptive with the globally changing scenario is very difficult because of the heavy anchor of deeply held values and habits. It takes concerted management action over a sustained period of time to replace an unhealthy culture with a healthy culture or to root out certain unwanted cultural obstacles and instil ones that are more strategy-supportive.

The following needs to be done to change the culture for making it to remain adaptive with globally changing scenario:

1. To diagnose which facets of the present culture are strategy supportive and which are not.
2. Managers have to talk openly and forthrightly to all concerned about those aspects of the culture that have to be changed.
3. Talk has to be followed swiftly by visible, aggressive actions to modify the culture-actions that everyone will understand are intended to establish a new culture more in tune with the strategy.
4. The culture-changing actions include revising policies and procedures in ways that will help drive cultural change, altering incentive compensation (to reward the desired cultural behaviour), praising and recognizing people who display the new cultural traits, recruiting and hiring new managers and employees who have the desired

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cultural values and can serve as role models for the desired cultural behaviour, replacing key executives who are strongly associated with the old culture, and taking every opportunity to communicate to employees the basis for cultural change and its benefits to all concerned.

16. The changes in the environmental forces often require businesses to make modifications in their existing strategies and bring out new strategies. Strategic change is a complex process and it involves a corporate strategy focused on new markets, products, services and new ways of doing business.

To make the change lasting, Kurt Lewin proposed three phases of the change process for moving the organization from the present to the future. These stages are unfreezing, changing and refreezing.

(a) Unfreezing the situation: The process of unfreezing simply makes the individuals or organizations aware of the necessity for change and prepares them for such a change. Lewin proposes that the changes should not come as a surprise to the members of the organization. Sudden and unannounced change would be socially destructive and morale lowering. The management must pave the way for the change by first "unfreezing the situation", so that members would be willing and ready to accept the change.

Unfreezing is the process of breaking down the old attitudes and behaviours, customs and traditions so that they start with a clean slate. This can be achieved by making announcements, holding meetings and promoting the ideas throughout the organization.

(b) Changing to New situation: Once the unfreezing process has been completed and the members of the organization recognise the need for change and have been fully prepared to accept such change, their behaviour patterns need to be redefined. H.C. Kellman has proposed three methods for reassigning new patterns of behaviour. These are compliance, identification and internalisation.

- **Compliance:** It is achieved by strictly enforcing the reward and punishment strategy for good or bad behaviour. Fear of punishment, actual punishment or actual reward seems to change behaviour for the better.
- **Identification:** Identification occurs when members are psychologically impressed upon to identify themselves with some given role models whose behaviour they would like to adopt and try to become like them.
- **Internalization:** Internalization involves some internal changing of the individual's thought processes in order to adjust to a new environment. They have given freedom to learn and adopt new behaviour in order to succeed in the new set of circumstances.

(c) Refreezing: Refreezing occurs when the new behaviour becomes a normal way of life. The new behaviour must replace the former behaviour completely for successful

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and permanent change to take place. In order for the new behaviour to become permanent, it must be continuously reinforced so that this newly acquired behaviour does not diminish or extinguish.

Change process is not a one time application but a continuous process due to dynamism and ever changing environment. The process of unfreezing, changing and refreezing is a cyclical one and remains continuously in action.

17. Business Process Reengineering (BPR) is an approach to unusual improvement in operating effectiveness through the redesigning of critical business processes and supporting business systems. It is revolutionary redesign of key business processes that involves examination of the basic process itself. It looks at the minute details of the process, such as why the work is done, who does it, where is it done and when it is done. BPR refers to the analysis and redesign of workflows and processes both within the organization and between the organization and the external entities like suppliers, distributors, and service providers.

The orientation of redesigning efforts is basically radical. In other words, it is a total deconstruction and rethinking of business process in its entirety, unconstrained by its existing structure and pattern. Its objective is to obtain quantum jump in process performance in terms of time, cost, output, quality, and responsiveness to customers. BPR is a revolutionary redesigning of key business processes.

BPR involves the following steps:

1. **Determining objectives and framework:** Objectives are the desired end results of the redesign process which the management and organization attempts to achieve. This will provide the required focus, direction, and motivation for the redesign process. It helps in building a comprehensive foundation for the reengineering process.
2. **Identify customers and determine their needs*:*** The designers have to understand customers - their profile, their steps in acquiring, using and disposing a product. The purpose is to redesign business process that clearly provides added value to the customer.
3. **Study the existing process:** The existing processes will provide an important base for the redesigners. The purpose is to gain an understanding of the 'what', and 'why' of the targeted process. However, some companies go through the reengineering process with clean perspective without laying emphasis on the past processes.
4. **Formulate a redesign process plan:** The information gained through the earlier steps is translated into an ideal redesign process. Formulation of redesign plan is the real crux of the reengineering efforts. Customer focussed redesign concepts are identified and formulated. In this step alternative processes are considered and the best is selected.

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5. **Implement the redesign:** It is easier to formulate new process than to implement them. Implementation of the redesigned process and application of other knowledge gained from the previous steps is key to achieve dramatic improvements. It is the joint responsibility of the designers and management to operationalise the new process.

18. Growing use of the Internet by businesses and consumers reshapes the economic landscape and alters traditional industry boundaries. The following features stand out:

- The Internet makes it feasible for companies everywhere to compete in global markets.
- Competition in an industry is greatly intensified by the new e-commerce strategic initiatives of existing rivals and by the entry of new, enterprising e-commerce rivals.
- Entry barriers into the e-commerce world are relatively low.
- Online buyers gain bargaining power because they confront far fewer obstacles to comparing the products, prices, and shipping times of rival vendors.
- The Internet makes it feasible for companies to reach beyond their borders to find the best suppliers and, further, to collaborate closely with them to achieve efficiency gains and cost savings.
- Internet and PC technologies are advancing rapidly, often in uncertain and unexpected directions.
- The internet results in much faster diffusion of new technology and new idea across the world.
- The e-commerce environment demands that companies move swiftly.
- E-commerce technology opens up a host of opportunities for reconfiguring industry and company value chains.
- The Internet can be an economical means of delivering customer service.
- The needed e-commerce resource in short supply is human talent-in the form of both technological expertise and managerial know-how.

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