

MOCK TEST PAPER – 1
INTERMEDIATE (IPC): GROUP – II
PAPER –7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT
SECTION – A: INFORMATION TECHNOLOGY
SUGGESTED ANSWERS/HINTS

1. (i) **DDL Compiler:** DDL Compiler converts data definition statements into a set of tables. Tables contain meta-data (data about the data) concerning the database. It gives rise to a format that can be used by other components of the database.
- (ii) **Primary Key:** The primary key of any table is any candidate key of that table, which the database designer arbitrarily designates as “primary”. The primary key provides uniqueness to data for identification, for example- bank account number is used as primary key for its customers. The primary key may be selected for convenience, comprehension, performance, or any other reasons. Primary key uniquely identifies a record in a database.
- (iii) **Buffering:** Buffering enables the processor to execute another instruction while input or output is taking place rather than being idle while transfer was completed.
- (iv) **Switch:** It is a hardware device used to direct messages across a network. Switches create temporary point to point links between two nodes on a network and send all data along that link.
- (v) **Repeaters:** Repeaters are devices that solve the snag of signal degradation, which results as data is transmitted along the cables. It boosts or amplifies the signals before passing it through to the next section of cable.
- (vi) **Chat Server:** Some organizations choose to run a server that allows multiple users to have real-time discussions, called chats on the Internet. Mostly chat servers allow the creation of private chat rooms where participants can meet for private discussions.
- (vii) **HTML:** HTML (Hypertext Markup Language) is used to create Web pages. HTML lets the creator of a Web page specify how text will be displayed and how to link to other Web pages, files, and Internet services.
- (viii) **Secured Electronic Transaction (SET):** Secured Electronic Transaction (SET) is a combination of a protocol designed for use by other applications and a standard for handling credit card transactions over the Internet. Designed for cardholders, merchants, banks, and other card processors, SET uses digital certificates to ensure the identities of all parties involved in a purchase. It also encrypts credit card and purchase information before transmission on the Internet.

- (ix) **Flow Chart:** A diagram that shows sequence of steps to solve a particular problem. It is a logical flow of step which shows sequence of operations of a program by using symbols and interconnecting lines.
- (x) **Spooling Software:** The purpose of spooling software is to compensate for the speed difference between the computer and its peripheral devices such as input and output devices. It is used in large system and network computing environment.
2. (a) Main attributes of Local Area Networks (LAN) are given as follows:
- ◆ Inexpensive transmission media is used to connect computers in limited geographical area mainly through coaxial cable.
 - ◆ Inexpensive devices like modems, repeaters and transceiver is used to interface with the transmission media.
 - ◆ Provide easy physical connection of devices to the media.
 - ◆ Provide high data transmission rates between source and the destination.
 - ◆ Network data transmissions are easier for the devices with different transmission rates in the network.
 - ◆ Provide high degree of interconnection between the network devices.
 - ◆ All devices have the potential to communicate with other devices on the network.
 - ◆ It does not provide central controlling processor on the network.
 - ◆ Each attached device may only hear and does not necessarily process messages or instructions.
- (b) Different tools, which are available for the protection of information and systems against compromise, intrusion or misuse are given as follows:
- ◆ **Firewall:** It is a system that controls the flow of traffic between the Internet and the firm's internal LANs and systems. They are usually packaged as turnkey hardware/software packages, and are set up to enforce the specific security policies that are desired. A firewall is a proven, effective means of protecting the firm's internal resources from unwanted intrusion.
 - ◆ **Encryption:** It allows information to transit the Internet while being protected from interception by eavesdroppers. There are two basic approaches for encryption; these are given as under:
 - *Hardware encryption devices:* They are available at a reasonable cost, and can support high- speed traffic.
 - *Software encryption:* It is typically employed in conjunction with specific applications. Certain electronic mail packages, for example, provide encryption and decryption for message security.

- ◆ **Message Authentication:** It makes sure that a message is really from whom it purports to be and that it has not been tampered with.
 - ◆ **Site Blocking:** This is a software-based approach that prohibits access to certain web sites that are deemed inappropriate by management. For example, sites that contain explicit objectionable material can be blocked to prevent employee's from accessing these sites from company Internet servers.
3. (a) A Decision Support System (DSS) has four basic components, which are described as follows:
- (i) **The Users:** The user of a DSS is usually a manager with an unstructured or semi-structured problem to solve. In fact, user does not require a computer background to use a DSS for problem solving. He must have thorough understanding of the problem and the factors to be considered in finding a solution.
 - (ii) **Database:** DSS includes one or more databases. These databases contain both routine and non-routine data from both internal and external sources. The data from external sources include data about economic condition, market demand for goods and services and industry competition, whereas internal data includes data from the financial and managerial accounting system, marketing, production and personnel department.
 - (iii) **Planning Language:** Two types of planning languages are commonly used in DSS. These are:
 - **General Purpose:** These languages allow user to perform many routine tasks viz., retrieving various data from a database or performing statistical analysis, budgeting, forecasting and worksheet oriented problem. The languages used in most of the spread sheets are the good examples.
 - **Special Purpose:** Special purpose planning languages are statistical languages viz., SAS, SPSS and Mini Tab. These languages perform statistical and mathematical operations.
 - (iv) **Model Base:** The model base is the brain of the decision support system because it performs data manipulation and computations with the data provided to it by the user and database. Model base is custom developed model that does some types of mathematical functions viz., cross-tabulation, regression analysis, time series analysis, linear programming and financial computation. The analysis provided by the routines in the model base is the key to supporting the user's decision.
- (b) In a hierarchical database, records are logically organized into hierarchy of relationship. It is arranged in an inverted tree pattern. The following are the salient features of hierarchical database structure:
- ◆ Database structure is less flexible as relationships between records are relatively fixed by the structure.

- ◆ It requires that hierarchy of records must be determined and implemented before a search.
- ◆ Ad hoc queries are difficult and time consuming to accomplish.
- ◆ Frequent management queries may not be supported as effectively.
- ◆ Day to day operational data can be processed rapidly.
- ◆ Any group of records with natural relation may fit nicely.
- ◆ Records are logically structured in inverted tree pattern.
- ◆ It provides the parent – child relationship amongst the nodes.
- ◆ It implements one-to-one and one-to-many relationship.

4. (a) Major differences between Serial Transmission and Parallel Transmission are given as follows:

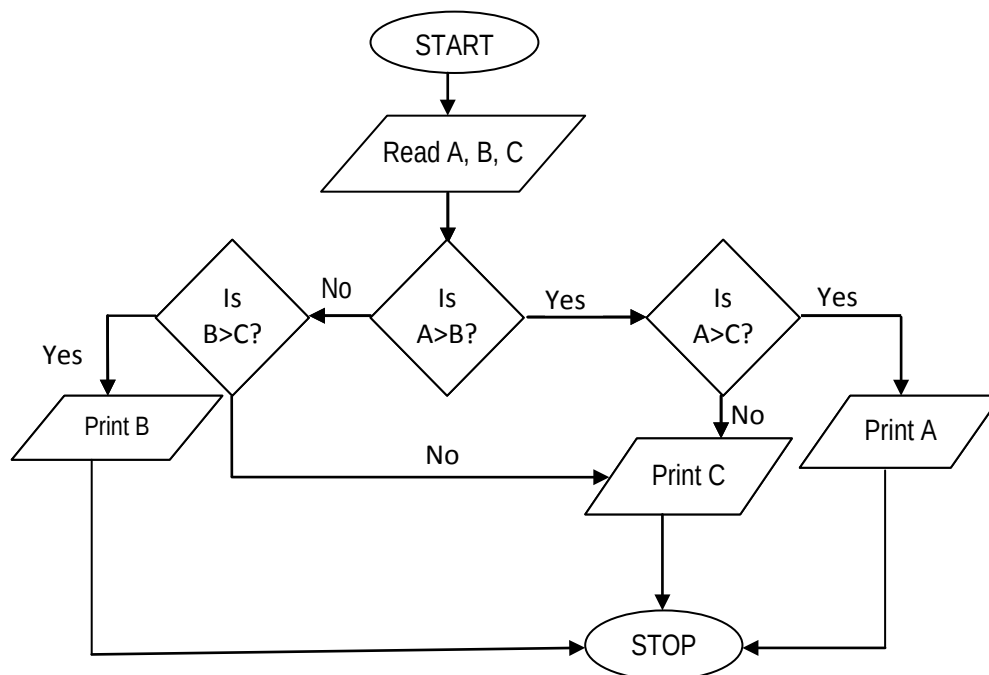
S. No.	SERIAL TRANSMISSION	PARALLEL TRANSMISSION
1	In this, the data bits are transmitted serially one after another.	In this, the data bits are transmitted simultaneously.
2	Data is transmitted over a single wire.	Data is transmitted over 8 different wires.
3	It is a cheaper mode of transferring data.	Relatively expensive.
4	Applicable for long distance data transmissions.	Not practical for long distance communications as it uses parallel path, so cross talk may occur.
5	Relatively slower	Relatively faster.

- (b) **Supply Chain Management (SCM):** SCM is the process of planning, implementing and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. It spans all movement and storage of raw materials, work-in-process inventory, and finished goods from point-of-origin to point-of-consumption.

Following are the potential problems, which must be addressed by a SCM:

- ◆ **Distribution Network Configuration:** Number and location of suppliers, production facilities, distribution centers, warehouse and customers.
- ◆ **Distribution Strategy:** Centralized versus decentralized, direct shipment, cross docking, pull or push strategies, third party logistics.

- ♦ **Information:** Integrate systems and processes through the supply chain to share valuable information including demand signals, forecasts, inventory and transportation.
 - ♦ **Inventory Management:** Quantity and location of inventory including raw materials, work-in-process and finished goods.
5. (a) Major limitations of flowcharts are given as follows:
- ♦ *Complex logic* - Flowchart becomes complex and clumsy where the problem logic is complex.
 - ♦ *Modification* - If modifications to a flowchart are required, it may require complete re-drawing.
 - ♦ *Reproduction* - Reproduction of flowcharts is often a problem because the symbols used in flowcharts cannot be typed.
 - ♦ *Link between conditions and actions* - Sometimes it becomes difficult to establish the linkage between various conditions and the actions to be taken there upon for a particular condition.
 - ♦ *Standardization* - Program flowcharts, although easy to follow, are not such a natural way of expressing procedures as writing in English, nor are they easily translated into Programming language.
 - ♦ The essentials of what is done can easily be lost in the technical details of how it is done.
 - ♦ There are no obvious mechanisms for progressing from one level of design to the next e.g., from system flowchart to run flowcharts, program flowchart etc.
- (b) The required flowchart is drawn in the following figure:



6. (a) A Database Administrator (DBA) is a database professional, who actually creates and maintains the database, and carries out the policies developed by the data administrator. Major roles and responsibilities of a DBA are given as follows:
- ◆ DBA determines and maintains the physical structure of the database.
 - ◆ DBA provides the facility for updating and changing the database, including the deletion of inactive records.
 - ◆ S/he creates and maintains edit controls over changes and additions to the database.
 - ◆ DBA uses DDL to define the contents and the structure of the database so that database formats, relationships among various data elements and their usage can easily be described.
 - ◆ DBA allows only specified users to access certain paths into the database and thus prevents unauthorized access.
 - ◆ Also prepares documentation, which includes recording the procedures, standards, guidelines and data descriptions necessary for the efficient and continued use of the database environment.
 - ◆ DBA ensures that operating staff performs its database processing related responsibilities which include loading the database, following maintenance and security procedures, taking backups, scheduling the database for use, etc.
 - ◆ In addition, s/he also ensures that standards for database performance are met and the accuracy, integrity and security of data is being maintained. He also sets up procedures for identifying and correcting violation of standards documents and corrects errors.
 - ◆ DBA is also responsible for incorporating any enhancement into the database environment which may include new utility programs or new system releases and changes into internal procedures for using database etc.
- (b) Major advantages of interpreters over compilers are given as follows:
- ◆ Interpreters are usually easier and faster to use, since the user is not bothered with distinct and time-consuming compile, link-edit, and execution stages.
 - ◆ Secondly, they typically provide users with superior error messages. When a program contains an error and “blows up,” the interpreter knows exactly which statement triggered the error – the one it last translated. Because interpreters stop when errors are encountered, they help programmers debug their programs. This boosts programmer productivity and reduces program development time. Syntax errors encountered by compilers during the program translation process are counted, but the diagnostic routines and error

messages associated with most compilers do not help programmers locate errors as readily as interpreters.

- ◆ An interpreter for a 3GL typically requires less storage space in primary memory than a compiler for that language. So they may be ideal for programming environments in which main memory is limited, such as on low-end microcomputers.
- ◆ Interpreters are usually less expensive than compilers.

7. (a) **M-Commerce:** Mobile Commerce is the buying and selling of goods and services through wireless handheld devices such as cellular phones and personal digital assistants (PDAs). M-Commerce enables users to access the Internet without needing to find the place to plug in. In order to exploit the m-commerce market potential, manufacturers are working to develop wireless application protocol (WAP) enabled smart phones and ways to reach them. Using Bluetooth technology, smart phones offer fax, e-mail and phone capabilities all in one, paving the way for m-commerce to be accepted by an increasingly mobile workforce. As content delivery over wireless devices becomes faster, more secure and scalable, m-commerce will surpass wireline e-commerce as the method of choice for digital commerce transactions.
- (b) **Message Switching:** In message switching, end-users communicate by sending each other a message, which contains the entire data being delivered from the source to destination node. As a message is routed from its source to its destination, each intermediate switch within the network stores the entire message, providing a very reliable service. In fact, when congestion occurs, the message-switched network will store and delay the traffic until sufficient resources are available for successful delivery of the message. There is no direct connection between the source and destination nodes. The intermediary nodes (switches) have the responsibility of conveying the received message from one node to another in the network. Therefore, each intermediary node within the network must store all messages before retransmitting them one at a time as proper resources become available. This characteristic is often referred to as store-and-forward.
- (c) **On-line Backup:** It is performed by executing the command-line or from the "Backup database" utility. When an on-line backup process begins, the database engine externalizes all cached data pages kept in memory to the database file on disk. This process is called a check point. The database engine continues recording activity in the transaction log file while the database is being backed up. The log file is backed up after the backup utility finishes backing up the database. The log file contains all of the transactions recorded since the last database backup. For this reason, the log file from an on-line full backup must be applied to the database during recovery.

- (d) **Fifth Generation Language:** A fifth-generation language (abbreviated as 5GL) is a programming language based around solving problems using constraints given to the program, rather than using an algorithm written by a programmer. This way, the programmer only needs to worry about what problems need to be solved and what conditions need to be met, without worrying about how to implement a routine or algorithm to solve them. These are used mainly in Artificial intelligence research, fuzzy logic and neural networks.
- (e) **Bluetooth:** It is telecommunication industry specifications that describe how mobile phones, computer and Personal Digital Assistant (PDAs) can easily be interconnected using a short range wireless connection. It is a short distance wireless connection which use transceiver chip that transmits and receives signals in the frequency band of 2.5 GHz. Using this technology, user of cell phones, pagers and PDAs can buy a 3-in-one phone that can double as a portable phone at home or in the office, get quickly synchronized with information in a desktop or a notebook computer, initiate the sending or receiving of a file, initiate a print- out, and, in general, have all mobile and fixed computer devices be totally coordinated. Connection can be point to point or multipoint. The maximum range is 10m and data can be transmitted at a rate of 1mbps. It has built-in encryption and verification system.

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SECTION – B: STRATEGIC MANAGEMENT
SUGGESTED ANSWERS/HINTS

- 1 (a) Education is considered to be a noble profession. An educational institution often functions as a not-for-profit organization managed by trusts and societies. They include schools, colleges and universities. Being inherently non-commercial in nature, educational organisations do not have cut-throat competition as in case of their commercial counterparts. However, as the number of institutions belonging to both public and private sector are increasing, the competition is gradually rising. Through the use of strategic management techniques such institutes are expected to concentrate attention towards:
- ◆ Getting better name and recognition.
 - ◆ Attracting talented students.
 - ◆ Designing the curriculum in such a way to provide better citizenry and employability.
 - ◆ Appointing and retaining quality faculty for teaching.
 - ◆ Preparing students for the future challenges by capacity building.
- (b) The most important phenomenon which often distinguishes one organisation with another is its 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.

As a **Strength**: Culture can facilitate communication, decision making and control and instil cooperation and commitment. An organization's culture could be strong and cohesive when it conducts its business according to clear and explicit set of principles and values, which the management communicates to employees and the values that are shared widely across the organisation.

As a **weakness**: Culture, as a weakness can obstruct the smooth implementation of strategy by creating resistance to change. An organization's culture could be characterised as weak when many sub-cultures exists, few values and behavioural norms are shared and traditions are rare. In such organizations, employees do not have a sense of commitment, loyalty and sense of identity.

- (c) 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.

- (d) A business portfolio is a collection of businesses and products that make up the organisation. Portfolio analysis is a tool by which management identifies and evaluates its various businesses. In portfolio analysis top management views its product lines and business units as a series of investments from which it expects returns. The best business portfolio is the one that best fits its strengths and weaknesses to the opportunities and threats in the environment. Through portfolio analysis, organisations are able to compare their various businesses and categorize them in various strata as promising, growing, without good future and so on.
- (e) Substitute products are a latent source of competition in an industry. In many cases they become a major constituent of competition. With regards to substitute products, factors such as prices, easy availability, and how best they are able to satisfy the needs of customers, determine the amount of competition through them. Substitute products offering a price advantage and/or performance improvement to the consumer can drastically alter the competitive character of an industry. And they can bring it about all of a sudden. Wherever substantial investment in R&D is taking place, threats from substitute products can be expected. Substitutes, too, usually limit the prices and profits in an industry.
- 2 (a) (i) **Correct:** Stability strategy is advisable option for the organisations facing recession. During recession businesses face reduced demand for their products even at low prices. Funds become scarce, expenditure on expansion is stopped, profits decline and businesses try to minimise the costs. They work hard to maintain the existing market share, so that company survives the recessionary period.
- (ii) **Correct:** Demarketing is a marketing strategy to reduce demand temporarily or permanently-the aim is not to destroy demand, but only to reduce or shift it. This happens when the demand is too much to handle. For example, buses are overloaded in the morning and evening, roads are busy for most of times,

zoological parks are over-crowded on Saturdays, Sundays and holidays. Here demarketing can be applied to regulate demand.

- (b) (i) A core competence is a unique strength of an organization which may not be shared by others. Core competencies are those capabilities that are critical to a business achieving competitive advantage. In order to qualify as a core competence, the competency should differentiate the business from any other similar businesses.
 - (ii) It refers to the design, implementation, and control of programs seeking to increase the acceptability of a social ideas, cause, or practice among a target group. For instance, the publicity campaign for prohibition of smoking in Delhi explained the hazard of smoking.
 - (iii) Logistics is a process that integrates the flow of supplies into, through and out of an organization to achieve a level of service that facilitate movement and availability of materials in a proper manner. When a company creates a logistics strategy it is defining the service levels at which its logistics is smooth and is cost effective.
- 3 (a) A strategic business unit (SBU) is a unit of the company that has a separate mission and objectives which can be planned independently from other company businesses. SBU can be a company division, a product line within a division or even a single product/brand, specific group of customers or geographical location. The SBU is given the authority to make its own strategic decisions within corporate guidelines as long as it meets corporate objectives.
- (b) Product life cycle (PLC) is a concept that describes a product's four major life stages, i.e., introduction, growth, maturity and decline in terms of sales, profits, customers, competitors and marketing emphasis. As the product finds market acceptance in introduction stage, it gradually enters the 'Growth' stage. During growth stage there is an exponential rise of the volumes accepted by the market. Many new entrants join the industry and then fight for market share. In this stage consolidation and concentration begins. Profits increase and mass marketing is done with product differentiation.
- (c) 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 enter 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

business that will increase its own supply capability or lessen 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 organizations enter into businesses of distribution channels.

4. **Strategic approaches:** International economic dynamics accompanied by geographical changes have changed the paradigm of global business. A firm / company who wish to go global will be guided by the following four types of strategies:

- (i) **Multi-domestic strategy:** A multi-domestic strategy focuses on competition within each country in which the firm operates. This Strategy is adopted when a company tries to achieve a high level of local responsiveness by matching their products and services offerings to national conditions prevailing in the countries they operate in. The organization attempts to extensively customize their products and services according to the local conditions of different countries.
- (ii) **Global strategy:** A global strategy assumes more standardization of products across country boundaries. Under this strategy, the company tries to focus on a low cost structure by leveraging their expertise in providing certain products and services and concentrating the production of these standard products and services at a few favourable locations around the world. Competitive strategy is centralized and controlled by the home office.
- (iii) **Transnational strategy:** Many large multinational firms, particularly those with many diverse products, may use a multi-domestic strategy with some product lines and a global strategy with others. A transnational strategy seeks to combine aspects of both multi-domestic and global strategies. Thus there is emphasizes on both local responsiveness and global integration and coordination. Although the transnational strategy is difficult to implement, environmental trends are causing multinational firms to consider the needs for both global efficiencies and local responsiveness.

When a firm adopts one or more of the above strategies, the firm would have to take decisions on the manner in which it would commence international operations. The decision as to how to enter a foreign market can have a significant impact on the results. Expansion into foreign markets can be achieved through following options:

- ◆ Exporting.
- ◆ Licensing/ Franchising.
- ◆ Joint Venture.
- ◆ Foreign Direct Investment.

5. **Decision making** is a managerial process and function of choosing a particular course of action out of several alternative courses for the purpose of accomplishment of the organizational goals. Strategic decisions are different in nature than all other decisions

which are taken at various levels of the organization during their day-to-day working. The major dimensions of strategic decisions are given below:

- ◆ *Strategic issues require top-management decisions:* Strategic issues involve thinking in totality of the organizations and also there is lot of risk involved.
 - ◆ *Strategic issues involve the allocation of large amounts of company resources:* It may require huge financial investment to venture into a new area of business or the organization may require huge number of manpower with new set of skills in them.
 - ◆ *Strategic issues are likely to have a significant impact on the long term prosperity of the firm:* Generally the results of strategic implementation are seen on a long term basis and not immediately.
 - ◆ *Strategic issues are future oriented:* Strategic thinking involves predicting the future environmental conditions and how to orient for the changed conditions.
 - ◆ *Strategic issues usually have major multifunctional or multi-business consequences:* As they involve organization in totality they affect different sections of the organization with varying degree.
 - ◆ *Strategic issues necessitate consideration of factors in the firm's external environment:* Strategic focus in organization involves orienting its internal environment to the changes of external environment.
6. 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 company may segregate its different products. 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 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.

As market conditions change over time, 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.

7. Total Quality Management is different from traditional management practices, requiring changes in organisational processes, beliefs, attitudes, and behaviours. 'Traditional management' means the way things are usually done in most organisations in the absence of a TQM focus. The nature of TQM differs from common management practices in many respects. Some of the key differences are as follows:
 - (i) *Strategic Planning and Management*: Quality planning and strategic business planning is indistinguishable in TQM. Customer satisfaction, defect rates and process cycle times receive very high attention on TQM which is not the case in traditional management.
 - (ii) *Changing Relationships with customers and suppliers*: Distinguishable, innovation is essential to meet and exceed customers' needs. In TQM quality is defined as product and services. Traditional management places customers outside of the enterprises and within the domain of marketing and sales.
 - (iii) *Organizational Structure*: TQM is also distinguishable as it views enterprise as a system of interdependent processes. Every process contains sub-processes and is also contained within a higher process.
 - (iv) *Organizational Change*: In TQM the environment in which the enterprise interacts is considered to be changing constantly. Management's job, therefore, is to provide the leadership for continual improvement and innovation in processes and systems, products, and services. TQM recognises the inevitability of external change and focuses on shaping the future.
 - (v) *Teamwork*: In TQM, individuals cooperate in team structure such as quality circles, steering committees, and self-directed work teams. Departments work together toward system optimization through cross-functional teamwork.
 - (vi) *Motivation and Job Design*: TQM managers provide leadership and motivation rather than overt intervention in the processes of their subordinates who are viewed as process managers rather than functional specialists.