MOCK TEST PAPER-I

INTERMEDIATE (IPC): GROUP – II

PAPER – 7: INFORMATION TECHNOLOGY AND STRATEGIC MANAGEMENT

SECTION – A: Information Technology

ANSWERS

PART I : MULTIPLE CHOICE QUESTIONS

1. (a) (vi), (iii), (i), (ii), (v), (vii), (iv)

2. (d) Operational Feasibility

3. (a) Business to Consumer e-Commerce

4. (d) Transaction Processing System

5. (c) Concurrent Auditor

6. (b) Infrastructure as a Service (IaaS)

7. (a) 

8. (c) Router

9. (c) Knowledge Level System

10. (b) Leased Application

PART II: DESCRIPTIVE QUESTIONS

1. (a) The characteristics of goals that an organization needs to achieve by implementing Business Process Automation shall be **SMART** which is defined as follows -

- **Specific:** Clearly defined,
- **Measurable:** Easily quantifiable in monetary terms,
- **Attainable:** Achievable through best efforts,
- **Relevant:** Entity must be in need of these, and
- **Timely**: Achieved within a given time frame.

(b) The different type of conversion activities involved in System Implementation phase of Information System Life Cycle are listed below:

- Direct Changeover
- Parallel Conversion
- Phased Conversion
- Pilot Conversion

2. (a) The advantages of **Ring topology** are as follows:

- Ring networks do not require a central computer to control activity nor does it need a file server.

- Each computer connected to the network can communicate directly with the other computers in the network by using the common communication channel, and each computer does its own independent applications processing.
- The ring network is not as susceptible to breakdowns as the star network, because when one computer in the ring fails, it does not necessarily affect the processing or communications capabilities of the other computers in the ring.
- Ring networks offer high performance for a small number of workstations or for larger networks where each station has a similar workload.
- Ring networks can span longer distances than other types of networks.
- Ring networks are easily extendable.

The disadvantages of **Ring topology** are as follows:

- Relatively expensive and difficult to install.
- Failure of one computer on the network can affect the whole network.
- It is difficult to troubleshoot a ring network.
- Adding or removing computers can disrupt the network.

The advantages of **Mesh topology** are as follows:

- Yields the greatest amount of redundancy in the event that if one of the nodes fails, the network traffic can be redirected to another node.
- Network problems are easier to diagnose.

The disadvantage of Mesh topology is its high cost of installation and maintenance as more cable is required than any other configuration.

(b) The Accounting Information System being used by Mr. Amit Kumar is **Transaction Processing System**. The processing cycle of Transaction Processing System includes following phases:

(i) **Data Entry:** The first step of the transaction processing cycle is the capture of business data. For example, transaction data may be collected by point-of-sale terminals using optical scanning of bar codes and credit card readers at a retail store or other business. The recording and editing of data has to be quickly and correctly captured for its proper processing.

(ii) **Transaction Processing:** Transaction processing systems process data in two basic ways: (a) batch processing, where transaction data are accumulated over a period of time and processed periodically, and (b) real-time processing or online processing, where data are processed immediately after a transaction occurs. All online TPS depend on the capabilities of fault tolerant computer systems that can continue to operate even if parts of the system fail and incorporate real-time processing capabilities.

(iii) **Database Maintenance:** An organization's databases must be updated by its transaction processing systems so that they are always correct and up-to-date. For example, database maintenance ensures that these and other changes are reflected in the data records stored in the company's databases.

(iv) **Document and Report Generation:** Transaction Processing Systems produce a variety of documents and reports. Examples of transaction documents include purchase orders, paychecks, sales receipts, invoices, and customer statements.

3. (a) The advantages of Database Management System (DBMS) are as follows:

- **Permitting data sharing:** One of the principle advantages of a DBMS is that the same information can be made available to different users.
- **Minimizing Data Redundancy:** In a DBMS, duplication of information or redundancy is, if not eliminated, carefully controlled or reduced i.e. there is no need to repeat the same data over and over again. Minimizing redundancy can therefore significantly reduce the cost of storing information on hard drives and other storage devices.
- **Integrity can be maintained:** Data integrity is maintained by having accurate, consistent, and up-to-date data. Updates and changes to the data only have to be made in one place in DBMS ensuring Integrity. The chances of making a mistake increase if the same data needs to be changed at several different places than making the change in one place.
- **Program and file consistency:** Using a DBMS, file formats and programs are standardized. This makes the data files easier to maintain because the same rules and guidelines apply across all types of data. The level of consistency across files and programs also makes it easier to manage data when multiple programmers are involved.
- **User-friendly:** DBMS makes the data access and manipulation easier for the user. DBMS also reduce the reliance of users on computer experts to meet their data needs.
- **Improved security:** DBMSs allow multiple users to access the same data resources which could lead to risk to an enterprise if not controlled. Security constraints can be defined i.e. Rules can be built to give access to sensitive data. Some sources of information should be protected or secured and only viewed by select individuals. Through the use of passwords, database management systems can be used to restrict data access to only those who should see it.
- **Achieving program/data independence:** In a DBMS, data does not reside in applications, but data bases program and data are independent of each other.
- **Faster application development:** In the case of deployment of DBMS, application development becomes fast. The data is already therein databases, application developer has to think of only the logic required to retrieve the data in the way a user needs.

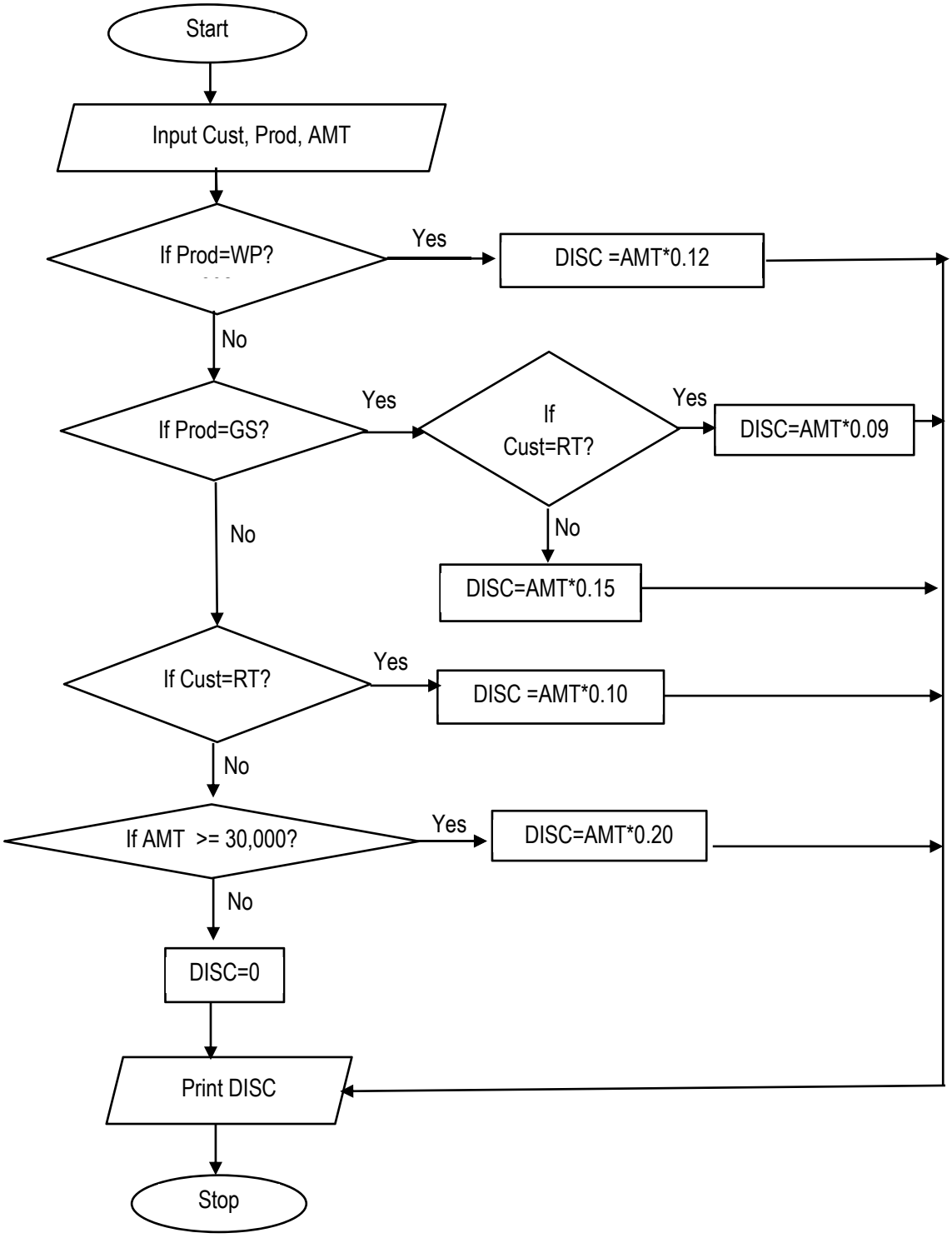
(b) The benefits of Grid Computing are as follows:

- **Making use of Underutilized Resources:** In most organizations, there are large amounts of underutilized computing resources. In some organizations, even the server machines can often be relatively idle. Grid computing provides a framework for exploiting these underutilized resources and thus has the possibility of substantially increasing the efficiency of resource usage. Grid computing or data grid can be used to aggregate this unused storage into a much larger virtual data store, possibly configured to achieve improved performance and reliability over that of any single machine.
- **Resource Balancing:** For applications that are grid-enabled, the grid can offer a resource balancing effect by scheduling grid jobs on machines with low utilization. This feature of grid computing handles occasional peak loads of activity in parts of a larger organization. An unexpected peak can be routed to relatively idle machines in the grid; and if the grid is already fully utilized, the lowest priority work being performed on the grid can be temporarily suspended or even cancelled and performed again later to make room for the higher priority work.

- **Parallel CPU Capacity:** The potential for usage of massive parallel CPU capacity is one of the most common visions and attractive features of a grid. A CPU-intensive grid application can be thought of as many smaller sub-jobs, each executing on a different machine in the grid. To the extent that these sub-jobs do not need to communicate with each other, the more scalable the application becomes. A perfectly scalable application will, for example, finish in one tenth of the time if it uses ten times the number of processors.
- **Virtual resources and virtual organizations for collaboration:** Another capability enabled by grid computing is to provide an environment for collaboration among a wider audience. The users of the grid can be organized dynamically into a number of virtual organizations, each with different policy requirements. These virtual organizations can share their resources such as data, specialized devices, software, services, licenses, and so on, collectively as a larger grid. These resources are virtualized to give them a more uniform interoperability among heterogeneous grid participants. The participants and users of the grid can be members of several real and virtual organizations. The grid can help in enforcing security rules among them and implement policies, which can resolve priorities for both resources and users.
- **Access to additional resources:** In addition to CPU and storage resources, a grid can provide access to other resources as well. For example, if a user needs to increase their total bandwidth to the Internet to implement a data mining search engine, the work can be split among grid machines that have independent connections to the Internet. In this way, total searching capability is multiplied, since each machine has a separate connection to the Internet. Some machines may have expensive licensed software installed that users require. Users' jobs can be sent to such machines, more fully exploiting the software licenses. Some machines on the grid may have special devices. All of these will make the grid look like a large system with a collection of resources beyond what would be available on just one conventional machine.
- **Reliability:** High-end conventional computing systems use expensive hardware to increase reliability. The machines also use duplicate processors in such a way that when they fail, one can be replaced without turning the other off. Power supplies and cooling systems are duplicated. The systems are operated on special power sources that can start generators if utility power is interrupted. All of this builds a reliable system, but at a great cost, due to the duplication of expensive components.
- **Management:** The goal to virtualize the resources on the grid and more uniformly handle heterogeneous systems create new opportunities to better manage a larger, more distributed IT infrastructure. The grid offers management of priorities among different projects. Aggregating utilization data over a larger set of projects can enhance an organization's ability to project future upgrade needs. When maintenance is required, grid work can be rerouted to other machines without crippling the projects involved.

4. (a) The abbreviations used in the flowchart are defined as under:

Cust : Customer	Prod : Product	GS : Gas Stove
WP : Water Purifier	AMT : Amount	DISC : Discount
RT : Retailer		



(b) The network security threats can be categorized into four categories, which are as follows:

- **Unstructured Threats** - These originate mostly from inexperienced individuals using easily available hacking tools from the Internet. Many tools available to anyone on the Internet can be used to discover weaknesses in a company's network. These include port-scanning tools, address-sweeping tools, and many others. Most of these kinds of probes are done more out of curiosity than with a malicious intent in mind. For example - if a company's external website is hacked; the company's integrity is damaged. Even if the external website is separate from the internal information that sits behind a protective firewall, the public does not know that.

All they know is that if the company's website is hacked, then it is an unsafe place to conduct business.

- **Structured Threats -** These originate from individuals who are highly motivated and technically competent and usually understand network systems design and the vulnerabilities of those systems. They can understand as well as create hacking scripts to penetrate those network systems. An individual who presents a structured threat typically targets a specific destination or group. Usually, these hackers are hired by industry competitors, or state-sponsored intelligence organizations.
- **External Threats** - These originate from individuals or organizations working outside an organization, which does not have authorized access to organization's computer systems or network. They usually work their way into a network from the Internet or dialup access servers.
- **Internal Threats -** Typically, these threats originate from individuals who have authorized access to the network. These users either have an account on a server or physical access to the network. An internal threat may come from a discontented former or current employee or contractor. It has been seen that majority of security incidents originate from internal threats.

5. (a) The key components of Accounting Information System (AIS) are as follows:

- **People:** AIS helps various system users that include accountants, consultants, business analysts, managers, chief financial officers and auditors etc. from different departments within a company to work together. With well-designed AIS, everyone within an organization who is authorized to do so can access the same system and get the same information. AIS also simplify getting information to people outside of the organization when necessary.
- **Procedure and Instructions:** These include both manual and automated methods for collecting, storing, retrieving and processing data.
- **Data:** It refers to the information pertinent to the organization's business practices that may include sales orders, customer billing statements, sales analysis reports, purchase requisitions, vendor invoices, check registers, general ledger, inventory data, payroll information, timekeeping, tax information etc. This data can then be used to prepare accounting statements and reports such as accounts receivable aging, depreciation/amortization schedules, trial balance, profit and loss, and so on.
- **Software:** These are the computer programs that provide quality, reliability and security to the company's financial data that may be stored, retrieved, processed and analyzed. Managers rely on the information it outputs to make decisions for the company, and they need high-quality information to make sound decisions.
- **Information Technology Infrastructure:** This include hardware such as personal computers, servers, printers, surge protectors, routers, storage media, and possibly a backup power supply used to operate the system. The hardware selected for AIS must be compatible with the intended software.
- **Internal Controls:** These are the security measures such as passwords or as complex as biometric identification to protect sensitive data against unauthorized computer access and to limit access to authorized users. Internal controls also protect against computer viruses, hackers and other internal and external threats to network security.

(b) The Six Sigma life cycle includes the phases Define, Measure, Analyze, Improve and Control (DMAIC) which are described as follows:

(i) **Define:** Customers are identified and their requirements are gathered. Measurements that are critical to customer satisfaction [Critical to Quality, (CTQ)] are identified for further project improvement.

(ii) **Measure:** Process output measures that are attributes of CTQs are determined and variables that affect these output measures are identified. Data on current process are gathered and current baseline performance for process output measures are established. Variances of output measures are graphed and process sigma are calculated.

(iii) **Analyze:** Using statistical methods and graphical displays, possible causes of process output variations are identified. These possible causes are analyzed statistically to determine root cause of variation.

(iv) **Improve:** Solution alternatives are generated to fix the root cause. The most appropriate solution is identified using solution prioritization matrix and validated using pilot testing. Cost and benefit analysis is performed to validate the financial benefit of the solution. Implementation plan is drafted and executed.

(v) **Control:** Process is standardized and documented. Before and after analysis is performed on the new process to validate expected results, monitoring system is implemented to ensure process is performing as designed. Project is evaluated and lessons learned are shared with others.

SECTION – B: STRATEGIC MANAGEMENT

SUGGESTED ANSWERS/HINTS

1. (A)

(1)	(2)	(3)	(4)	(5)
(c)	(c)	(d)	(a)	(b)

(B) (b)

(C) (d)

(D) (b)

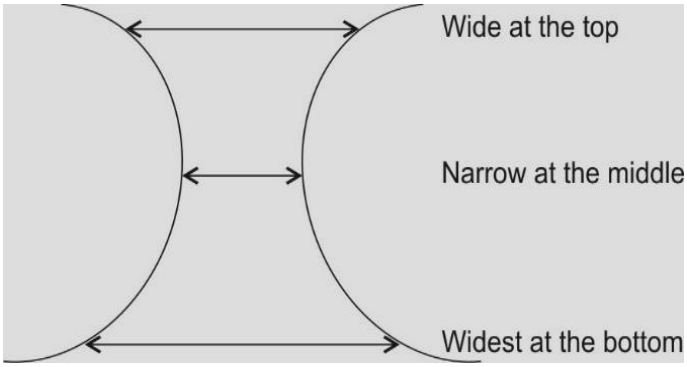
(E) (a)

(F) (c)

(G) (a)

2. In the recent years information technology and communications have significantly altered the functioning of organizations. The role played by middle management is diminishing as the tasks performed by them are increasingly being replaced by the technological tools. Hourglass organization structure consists of three layers in an organisation structure 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.



Hourglass Organization Structure

Hourglass structure has obvious benefit of reduced costs. It also helps in enhancing responsiveness by simplifying decision making. Decision making authority is shifted close to the source of information so that it is faster. However, with the reduced size of middle management, the promotion opportunities for the lower levels diminish significantly.

3. (a) Yummy foods are proactive in its approach. On the other hand, Tasty Food is reactive. Proactive strategy is planned strategy whereas reactive strategy is adaptive reaction to changing circumstances. A company's strategy is typically a blend of proactive actions on the part of managers to improve the company's market position and financial performance and reactions to unanticipated developments and fresh market conditions.

If organisational resources permit, it is better to be proactive rather than reactive. Being proactive in aspects such as introducing new products will give you advantage in the mind of customers.

At the same time, crafting a strategy involves stitching together a proactive/intended strategy and then adapting first one piece and then another as circumstances surrounding the company's situation change or better options emerge-a reactive/adaptive strategy. This aspect can be accomplished by Yummy Foods.

(b) 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 in new or existing products in both new and existing markets.

Companies should always be looking to the future. Businesses that use the Ansoff matrix can determine the best strategy. The matrix can help them to decide how to do this by demonstrating their options clearly, breaking them down into four strategies, viz., *Market Penetration, Market Development, Product Development, Diversification*. Determining which of these is best for their business will depend on a number of variables including available resources, infrastructure, market position, location and budget.

4. (a) Implementation and execution are an operations-oriented activity aimed at shaping the performance of core business activities in a strategy-supportive manner. To convert strategic plans into actions and results, a manager must be able to direct organizational change, motivate people, build and strengthen company's competencies and competitive capabilities, create a strategy-supportive work culture, and meet or beat performance targets. Good strategy execution involves creating strong "fits" between strategy and organizational capabilities, structure, climate & culture.

In most situations, strategy-execution process includes the following principal aspects:

1. **Developing budgets** that steer ample resources into those activities critical to strategic success.
2. **Staffing the organization with the needed skills and expertise**, consciously building and strengthening strategy-supportive competencies and competitive capabilities and organizing the work effort.
3. **Ensuring that policies and operating procedures facilitate rather than impede** effective execution.
4. **Using the best-known practices** to perform core business activities and pushing for continuous improvement.
5. **Installing information and operating systems** that enable company personnel to better carry out their strategic roles day in and day out.
6. **Motivating people** to pursue the target objectives energetically.
7. **Creating a company culture and work climate conducive** to successful strategy implementation and execution.
8. **Exerting the internal leadership needed to drive implementation forward and keep improving strategy execution.** When the organization encounters stumbling blocks or weaknesses, management has to see that they are addressed and rectified quickly.

(b) 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.

5. (a) Spacetek Pvt. Ltd. company has adopted *Focus strategy* which is one of the Michael Porter's Generic strategies. Focus strategies are most effective when consumers have distinctive preferences or requirements and when rival firms are not attempting to specialize in the same target segment. An organization using a focus strategy may concentrate on a particular group of customers, geographic markets, or on particular product-line segments in order to serve a well-defined but narrow market better than competitors who serve a broader market.

Advantages of Focus Strategy

1. Premium prices can be charged by the organizations for their focused product/services.
2. Due to the tremendous expertise about the goods and services that organizations following focus strategy offer, rivals and new entrants may find it difficult to compete.

Disadvantages of Focus Strategy

1. The firms lacking in distinctive competencies may not be able to pursue focus strategy.
2. Due to the limited demand of product/services, costs are high which can cause problems.
3. In the long run, the niche could disappear or be taken over by larger competitors by acquiring the same distinctive competencies.

(b) There are at least three major R&D approaches for implementing strategies.

i. **Be the leader:** The first strategy is to be the first firm to market new technological products. This is a glamorous and exciting strategy but also a dangerous one. Firms such as 3M and General Electric have been successful with this approach, but many other pioneering firms have fallen, with rival firms seizing the initiative.

ii. **Be an innovative imitator:** A second R&D approach is to be an innovative imitator of successful products, thus minimizing the risks and costs of startup. This approach entails allowing a pioneer firm to develop the first version of the new product and to demonstrate that a market exists. Then, laggard firms develop a similar product. This strategy requires excellent R&D personnel and an excellent marketing department.

iii. **Be a low-cost producer:** A third R&D strategy is to be a low-cost producer by mass-producing products similar to but less expensive than products recently introduced. As a new product accepted by customers, price becomes increasingly important in the buying decision. Also, mass marketing replaces personal selling as the dominant selling strategy. This R&D strategy requires substantial investment in plant and equipment, but fewer expenditures in R&D than the two approaches described earlier.

6. (a) Following are the differences 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 office to exchange rewards such as pay, status symbols 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 static environment, in growing or mature industries and in organisations that are performing well.

3. Transformational leaders inspire employees by offering 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.

(b) Although inextricably linked, strategy implementation is fundamentally different from strategy formulation in the following ways:

Strategy Formulation	Strategy Implementation
♦ Strategy formulation focuses on effectiveness.	♦ Strategy implementation focuses on efficiency.
♦ Strategy formulation is primarily an intellectual process.	♦ Strategy implementation is primarily an operational process.
♦ Strategy formulation requires conceptual intuitive and analytical skills.	♦ Strategy implementation requires motivation and leadership skills.
♦ Strategy formulation requires coordination among the executives at the top level.	♦ Strategy implementation requires coordination among the executives at the middle and lower levels.