



**SECTION A: ENTERPRISE INFORMATION SYSTEMS (50 MARKS)**

Question 1 is compulsory. Attempt any five from the rest

**Question 1**

**A) Use of CBIS in Production**

The objectives and sub-application areas of a computerized Production System is given below –

Objectives/ Goals (3 marks)	Sub-applications/ Modules (2 marks)
1. To optimally deploy man, machine and material to maximize production or service, 2. To generate production schedules and schedules of material requirements, 3. To monitor the product quality, plans for replacement or overhauling the machinery, 4. To help in Overhead Cost control and waste control.	1. The concept of Computer Aided Design and Computer Aided Manufacturing (CAD / CAM) has been developed due to application of IT. 2. Using this technology, quick change in design and manufacturing process, is possible to examine the effect of various alternatives.

**B) Processing Controls**

The Processing sub-system is responsible for computing, sorting, classifying, and summarizing data. Its components are – (1 mark)

- Central Processor -Programs are executed here [Note: Processor comprises - (a) Control Unit which fetches programs from memory and determines their type, (b) Arithmetic and Logical Unit, which performs operations, and (c) Registers, which are used to store temporary results and control information.]
  - Real or Virtual Memory (Program Instructions and Data are Stored)
  - Operating System (Manages System Resources)
  - Application Programs (Executes instructions to achieve specific User requirements.)
1. Central Processor Controls: Some Controls to reduce expected losses from errors and irregularities associated with Central Processors are –(1 mark)

Control	Explanation
Error Detection and Correction	a) Processors may malfunction due to design errors, manufacturing defects, damage, electromagnetic interference, and ionizing radiation. b) Various types of Error Detection and Correction Strategies must be used.
Multiple Execution States	a) Determination of number and nature of the execution states enforced by the Processor is very critical for the auditors. b) They help to determine unauthorized activities, such as gaining access to sensitive data maintained in memory regions assigned to the operating system or other user processes,
Timing Controls	An Operating System might get stuck in an infinite loop. In the absence of any control, the program will not allow the Processor to function and prevent other programs from performing.
Component Replication	Failure of Processor can result in significant losses. Redundant Processors allow errors to be detected and corrected. If Processor Failure is permanent in multicomputer or multiprocessor architectures, the system might re-configure itself to isolate the failed processor.

2. Real Memory Controls: (1 mark)
- (a) It comprises of fixed amount of primary storage in which programs or data must reside to carry out the Instructions from the Central Processor.
  - (b) It also tries to detect and correct errors that occur in memory cells and to protect areas of memory assigned to a program from illegal access by another program.
3. Virtual Memory Controls: (1 mark)
- (a) Virtual Memory exists when the addressable storage space is larger than that of the available Real Memory Space.
  - (b) To achieve this outcome, a Control Mechanism is used to map Virtual Memory Addresses into Real Memory Addresses

4. Data Processing Controls perform validation checks to identify errors during processing of data. They are required to ensure both the completeness and the accuracy of data being processed. Normally, the Data Processing Controls should be enforced through the Database Management System, and the front-end application system, so as to have consistency in the control process. Data Processing Controls are -(1 mark)
- (a) Run-to-Run Totals: These help in verifying data that is subject to process through different stages.
  - (b) Reasonableness Verification: Two or more fields can be compared and cross verified to ensure their correctness. Example: the statutory percentage of Provident Fund can be calculated on the Gross Pay amount to verify if the Provident Fund contribution deducted is accurate.
  - (c) Edit Checks: Edit Checks similar to data validation controls, can also be used at the processing stage, to verify accuracy and completeness of data.
  - (d) Field Initialization: Data Overflow can occur, if records are constantly added to a table or if fields are added to a record without initializing it, i.e. setting all values to zero before inserting the field or record.
  - (e) Exception Reports: Exception Reports are generated to identify errors in data processed. Such Exception Reports give the Transaction Code and why the particular transaction was not processed or what is the error in processing the transaction. Suitable action should be taken on such Exception Reports.
  - (f) Existence / Recovery Controls: The check-point / restart logs facility is a short-term backup and recovery control, that enables a system to be recovered if failure is temporary and localized.

## Question 2

### A) Advantages of Grid Computing

Point	Description
1. Resource Balancing (1 mark)	<ul style="list-style-type: none"> <li>a) Grid offers resource balancing effect by scheduling grid jobs on machines with low utilization.</li> <li>b) Occasional peak loads of activity can be routed to relatively idle machines in the Grid.</li> <li>c) If the Grid is already fully used, the lowest priority work being performed on the Grid can be suspended or even cancelled and performed again later, to complete the higher priority work.</li> </ul>
2. Activity Management(0.5 mark)	<ul style="list-style-type: none"> <li>(a) A Grid can handle heterogeneous systems, and a larger, more distributed IT infrastructure.</li> <li>(b) Using a Grid, an Entity can manage priorities among different projects and activities.</li> <li>(c) When maintenance is required on a machine, grid work can be re-routed to other machines.</li> </ul>
3. Using Spare Capacity0.5 mark)	<ul style="list-style-type: none"> <li>(a) Grid Computing uses under-utilized resources, and increases the efficiency of resource usage.</li> <li>(b) A Data Grid can be used to aggregate unused storage into a much larger virtual Data Store, configured to achieve improved performance and reliability over that of any single machine</li> </ul>
4. Resource Sharing amongst Entities0.5 mark)	<ul style="list-style-type: none"> <li>(a) Users of a Grid can be organized dynamically into a number of virtual organizations, who can collaborate and share their resources (Data, Specialized Devices, Software, Services, Licenses, etc.), collectively as a larger Grid.</li> <li>(b) Such Grid should have Security Rules and Policies, to handle priorities for both resources and</li> </ul>
5. Higher Computing Capacity0.5 mark)	<ul style="list-style-type: none"> <li>(a) The biggest benefit of Grid Computing is the potential for usage of massive parallel CPU capacity.</li> <li>(b) A CPU-intensive grid application can be visualised as many smaller sub-jobs, each executing on a different machine in the grid.</li> <li>(c) If these sub-jobs do not need to communicate with each other, the application becomes more scalable. Due to availability of multiple processors, the application will be computed in no time.</li> </ul>
6. Additional Resources0.5 mark)	<ul style="list-style-type: none"> <li>(a) Grid can provide access to additional resources, in terms of CPU, Storage Resources, Internet, etc.</li> <li>(b) If a User wants a higher bandwidth to the Internet for a specified activity (e.g. Data Mining Search Engine), the work can be split among grid machines that have independent connections</li> </ul>
7. Reliability0.5 mark)	<ul style="list-style-type: none"> <li>(a) Grids involve the use of - (a) duplicate processors, (b) backup power supplies &amp; generators, (c) more efficient cooling systems, etc.</li> <li>(b) This creates a reliable system, but at a great cost, due to the duplication of expensive components.</li> </ul>

B) Front End vs Back End: Every Software has two parts, viz. Front End and Back End, described as under –

Point	Front End (2 marks)	Back End (2 marks)
Meaning	It is part of the overall Software which actually interacts with the User who is using the Software.	It is a part of the overall Software which does not directly interact with the User, but interacts with <b>Front End only</b> .
Purpose	It is meant for handling requests from Users.	It is meant for storing and handling the data.
Data	It handles processed data.	It handles Raw Data and processes it.
Language	Front-End speaks in the language understood by the User and also understands technical language spoken by the Back-End.	Back-End speaks in technical language not directly understood by the User. Thus, it interacts only with the Front-End which translates for the User.
Presentation	It is meant for presenting information in proper format and structure, use of different colours, bold, italic letters, Tables, Charts, etc.	It is meant for handling data, and not "presentation" of data to the User.
User Interface	Front-End Software guides a User to the desired report or feature. The User Interface of the Front-End is intuitive, i.e. minimum use of help should be sought by User.	Back-End Software is not intended to improve "User Experience". It is intended to handle the data processing requests effectively and communicate the same to the Front-End.

Question 3

A) Job Titles

Item	Description
1. Meaning (1 mark)	<p>A Job Title -</p> <ul style="list-style-type: none"> <li>a) is a Label that is assigned to a Job Description,</li> <li>b) denotes a position in the Entity that has a given set of responsibilities, and which requires a certain level of education and experience.</li> </ul>
2. Significance (3 mark)	<ul style="list-style-type: none"> <li>a) Standards of Performance: A Job Title serves a short summary of a Job Description, and helps the Job Holder to understand the role, tasks and duties allotted to him, in a better manner.</li> <li>b) Recruitment: Use of standard Job Titles will help prospective candidates more easily find position that match their criteria. This helps the Entity to recruit persons to fill up vacancies.</li> <li>c) Remuneration: Use of standard Job Titles makes it easier for an Entity to compare the Salary / Remuneration Package offered to various Job Holders, with industry standards, other Entities, etc. This concept is called Compensation Base lining.</li> <li>d) Career Paths: An Entity that has a program of career advancement may have a set of Career Paths or Career Ladders that are models showing how employees may advance. For each Job Title, a Career Path will show the possible avenues of advancement to other Job Titles, and the</li> </ul>

B) Liability of Intermediaries

1. "Intermediary" with respect to any particular Electronic Records -
  - (a) means any person who on behalf of another person receives, stores or transmits that record or provides any service with respect to that record, and
  - (b) includes Telecom Service Providers, Network Service Providers, Internet Service Providers, Web Hosting Service Providers, Search Engines, Online Payment Sites, Online-Auction Sites, Online Market Places and Cyber Cafes.
2. An Intermediary shall not be liable for any third party information, data, or communication link made available or hosted by him, as under –

Intermediary not liable, if- (2 marks)	Intermediary is liable, if – (2 mark)
<p>a) the function of the Intermediary is limited to providing access to a communication system over which information made available by third parties is transmitted or temporarily stored or hosted, or</p> <p>b) the Intermediary does not - (i) initiate the transmission, (ii) select the Receiver of the transmission, and (iii) select or modify the information contained in the transmission,</p> <p>c) the Intermediary observes due diligence while discharging his duties under this Act and also observes such other guidelines as the Central Government may prescribe in this behalf.</p>	<p>a) the Intermediary has conspired or abetted or aided or induced, whether by threats or promise or otherwise in the commission of the unlawful act,</p> <p>b) upon receiving actual knowledge, or on being notified by the appropriate Government or its agency that any information, data or communication link residing in or connected to a computer resource controlled by the intermediary is being used to commit the unlawful act, the Intermediary fails to expeditiously remove or disable access to that material on that resource without vitiating the evidence in any manner.</p>

#### Question 4

##### A) Controls based on Functional Nature

The major types of internal control components are – (1.33 marks for each point)

1. Internal Accounting Controls: These controls are intended to safeguard the Client's Assets and ensure the reliability of the financial records. The IS Auditor is most familiar with these types of control.
2. Operational Controls: These deal with the day to day operations, functions and activities to ensure that the operational activities are contributing to business objectives.
3. Administrative Controls: These are concerned with ensuring efficiency and compliance with management policies, including the operational controls.

##### B) Threats associated with BYOD Concept (1 mark for each point)

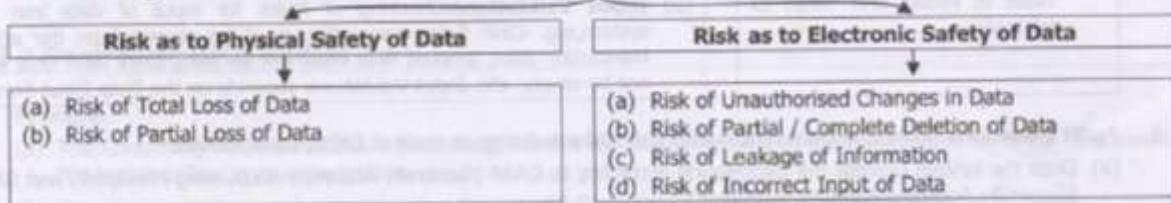
Risks associated in implementation of BYOD are generally classified into four broad areas –

Risk	Description
Network Risks, i.e. Lack of Device Visibility	<p>(a) In BYOD Environment, the Employer has no control over the number of devices and systems used, traffic handled, and data exchanged over the Internet / Intranet.</p> <p>(b) Network Security Risk increases in case of Virus attack, and when there is a need for scanning all systems in the Network.</p>
Device Risks, i.e. Loss of Device	<p>(a) In BYOD Environment, Loss of Employee's Personal Devices which contains sensitive corporate information, can cause financial and reputational embarrassment to an organization.</p> <p>(b) Data from stolen or lost devices can provide easy access to Company emails, Company trade secrets, etc.</p>
Application Risks, i.e. Application Viruses and Malware	<p>(a) Vulnerabilities of Mobile Phones, relating to data exchange over the Internet / Intranet, is higher.</p> <p>(b) Employees' Mobiles and Smart Devices are not generally protected by Security Software available with the Entity.</p> <p>(c) Also, there is a lack of clarity in identifying 'who is responsible for device security - the Employer or the Employee'.</p>
Implementation Risks, i.e. Weak BYOD Policy	<p>(a) This risk relates to the possibility of lack of proper BYOD Policy or poor communication thereof, device misuse, and consequent loss of valuable Corporate Knowledge and Data.</p> <p>(b) This risk can be overcome through measures like - (i) adherence to a robust BYOD Implementation Policy, (ii) an effective Employee education / training programme.</p>

Question 5

a) ( 2 – 2 marks, 3 – 2 marks)

1. Risks relating to Data in an ERP: Due to centralized/ integrated Database, the following risks arise in an ERP –



2. Risks and Associated Controls: In relation to ERP, some risks and associated controls are listed below –

Aspect	Risk	Control Required
Data Access	Data is stored centrally and all Departments access that Central Data. This creates a possibility of access to non-relevant data.	Access Rights should be defined very carefully. Access should be given on "Need to know" and "Need to do" basis only.
Data Safety	There is only one set of data. If this data is lost, the entire business may come to a standstill.	There should be strong physical control, along with effective Data Backup Arrangements.
Operation Speed	As the size of the Central Databases increases, it reduces the speed of operation.	Hardware should be upgraded regularly to increase speed. Redundant Data should be removed using techniques like Data Warehousing.
Change in Process	Since the overall system is integrated, a small change in process for one Department may require lot of time, efforts and cost.	All processes must be documented properly while designing the ERP, so as to avoid any changes that are costly to implement later.
Staff Turnover	In case of Staff Turnover, it is increasingly difficult to maintain the system, due to its complexity and integration.	There should be proper Staff Training System, Helpdesk / Operation Manuals, Backup Plans for Staff Turnover, etc.
System Failure	Due to Single Server and Central Database, in case of failure of system, the whole business may get affected badly.	There should be proper DRP and BCP Plans, including Secondary Server, Offsite Backup, alternate Hardware / Internet arrangements, etc.

3. Role Based Access Controls (RBAC) in ERP:

- (a) Role-Based Access Control (RBAC) or Role-Based Security, is an approach to restricting System Access to Authorized Users.
  - (b) Roles for Staff are defined in an Entity, and access to the system can be given according to the role assigned.
  - (c) RBAC can implement Mandatory Access Control or Discretionary Access Control.
  - (d) RBAC is a policy-neutral access control mechanism defined around roles and privileges. The components of RBAC such as Role-Permissions, User-Role and Role-Role Relationships make it simple to perform User Assignments.
- e) Access can be allowed / disallowed in respect of – (i) Master Data, (ii) Transaction Data, or (iii) Reports , for the following functions / activities / options –
- Create – Allows to create data
  - Alter – Allows to alter data
  - View – Allows only to view data
  - Print – Allows to print data

B) Damage to Computer System or Network

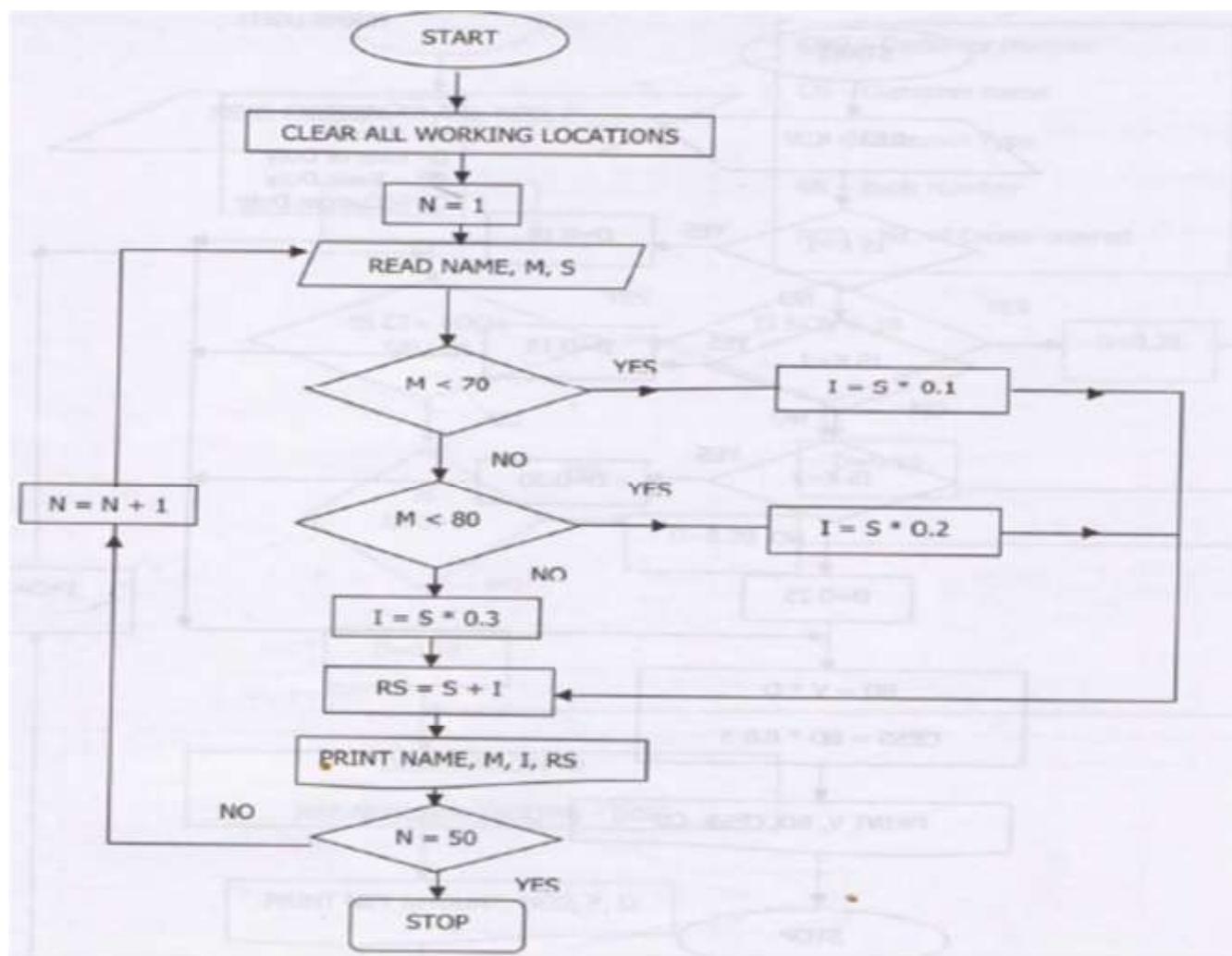
1. Penalty and compensation for damage to Computer and Computer System [Sec. 43]: Any person, guilty of performing the following types of offences, without permission of the owner or any other person in-charge of a computer, computer system or computer network, shall be liable to pay damages by way of compensation to the affected person. (1 mark)
2. Acts constituting offence: If any person without the permission of owner / person-in-charge of computer, computer system or computer network –(3 marks)
  - (a) Accesses/ secures access to such computer, computer system, computer network/ computer resources,
  - (b) Downloads, copies or extracts any data, computer database or information, including information or data held or stored in any removable storage medium,
  - (c) Introduces or causes to be introduced any computer contaminant or computer virus,
  - (d) Damages or causes to be damaged data, computer database or any other programmes,
  - (e) Disrupts or causes disruption,
  - (f) Denies or causes denial of access to any person authorised to access,
  - (g) Provides any assistance to any person to facilitate access in contravention of the provisions of this Act, rules or regulations,

- (h) Charges the services availed of by a person to the account of another person by tampering with or manipulating.
- (i) Destroys, deletes or alters any information residing in a computer resource or diminishes its value or utility or affects it injuriously by any means.
- (j) Steal, conceals, destroys or alters or causes any person to steal, conceal, destroy or alter any computer source code used for a computer resource with an intention to cause damage.

3. Meaning of Terms:

- Computer Contaminant means any set of computer instructions that are designed - (a) to modify, destroy, record, transmit data or programme residing within a computer, computer system or computer network, or (b) by any means, to usurp the normal operation of the computer, computer system, or computer network. (1 mark)
- Computer Data Base means a representation of information, knowledge, facts, concepts or instructions in text, image, audio, video that are being prepared or have been prepared in a formalised manner or have been produced by a computer, computer system or computer network and are intended for use in a computer, computer system or computer network. (1 mark)
- Computer Virus means any computer instruction, information, data or programme that -
  - (a) destroys, damages, degrades or adversely affects the performance of a computer resource, or
  - (b) attaches itself to another computer resource and operates when a programme data or instruction is executed or some other event takes place in that computer resource. (1 mark)
- Damage means to destroy, alter, delete, add, modify or rearrange any computer resource by any means. (0.5 mark)
- Computer Source Code means the listing of programmes, computer commands, design and layout and programme analysis of computer resource in any form. (0.5 mark)

Question 6 (8 marks)



### Question 7

- A) IS Audit of Logical Access Controls includes the following aspects – (1 mark each, student may write the answer in short, detailed explanation not required)
1. Preliminary and Documentation Review:
    - (a) Review the IT Infrastructure to map out the Entity's Logical Access Paths.
    - (b) Use investigative and technical tools to determine the Network Access Paths, and also involve the work of Specialized Experts on IT Network Architecture.
    - (c) Request for the Entity's documentation of its Network Architecture and compare it with what was discovered independently by the Auditor. Identify reasons for discrepancies, if any.
    - (d) Evaluate each application to determine all the documented and undocumented Access Paths to functions and data.
  2. Audit of User Access Controls: The IS Auditor should focus on the following four core areas –

Area	Role of IS Auditor
User Access Controls	<ol style="list-style-type: none"><li>a) Authentication: Review the Network and System Resources to see if any resources can be accessed without any authentication itself.</li><li>b) Access Violations: See if the Systems, Networks, and Authentication Mechanisms can log Access Violations, in the form of system logs showing invalid login attempts, and action taken thereon.</li><li>c) System Accounts: Identify all system-level accounts on Networks, Systems, and Applications. [Note: System Accounts may be created at testing / implementation /upgrade stage, etc.] Examine its relevance, and also determine who has the Password for the System Account, whether accesses by System Accounts are logged, and who monitors those logs.</li><li>d) User Account Lockout: Determine whether the Systems and Networks can automatically lock User Accounts that are the target of attacks, e.g. after 3 unsuccessful login attempts within a short period.</li><li>e) Intrusion Detection and Prevention Systems (IDS/IPS): Determine if there are any IDSs or IPSs that</li></ol>
Password Management	<p>Examine the Password Configuration setting on Information Systems to determine -</p> <ol style="list-style-type: none"><li>a) how Passwords are controlled,</li><li>b) how many characters must a Password have,</li><li>c) is there a maximum length for Passwords,</li><li>d) how frequently must Passwords be changed,</li><li>e) whether previous Passwords may be used again and if so, after how many changes,</li><li>f) whether the Password is displayed when logging in or when creating a new password, etc.</li></ol>
User Access Provisioning	<ol style="list-style-type: none"><li>a) Segregation of Duties (SoD): Examine the SoD Matrix if any, and identify compliance thereof in relation to User Access Provisioning, grant / denial of Access Rights, etc.</li><li>b) Access Request: Identify all User Access Request Processes, and determine if these processes are used consistently throughout the Entity.</li><li>c) Access Approvals: Evaluate how requests are approved and by what authority. See whether System or Data Owners approve access requests. Examine denials of accesses and reasons thereof.</li><li>d) New Employees: Examine how a New Employee's User Accounts are initially set up, including their Access Rights, and approval of their immediate Manager for such Access Rights.</li><li>e) Access Reviews: Examine if there are any periodic access reviews, e.g. Termination Reviews, Internal Transfer Reviews, SOD Reviews, and Dormant Account Reviews.</li></ol>

Employee Terminations	<ul style="list-style-type: none"> <li>a) Termination: Examine the effectiveness of the Employee Termination Process, e.g. how terminations are performed, when User Account Management Personnel are notified of terminations, etc.</li> <li>b) Access Reviews: Determine if any internal reviews of terminated accounts are performed, and see if any missed terminations are identified and if any process improvements are undertaken.</li> <li>c) Contractors: Evaluate the effectiveness of Contractor Access and Termination Management.</li> </ul>
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3. Audit of User Access Logs: The IS Auditor should focus on the following areas –

Area	Role of IS Auditor
Relevance of Access Logs	<ul style="list-style-type: none"> <li>a) Identify what events are recorded in Access Logs.</li> <li>b) Evaluate the capabilities of the system being audited and determine if the right events are being logged, or if logging is suppressed on events that should be logged.</li> </ul>
Storage & Retention	<ul style="list-style-type: none"> <li>a) See if the Access Logs are aggregated or if they are stored on individual systems.</li> <li>b) Examine whether there is a backup process for Access Logs.</li> <li>c) Determine how long access the Access Logs are retained by the Entity.</li> </ul>
Access Log Protection	<ul style="list-style-type: none"> <li>a) Examine if Access Logs can be altered, destroyed, or attacked to cause the system to stop logging events.</li> <li>b) For highly-sensitive environments, examine the need for Logs to be written to unalterable digital media.</li> </ul>
Access Log Review	<ul style="list-style-type: none"> <li>a) Examine if the policies, processes, or procedures regarding Access Log Review are adequate.</li> <li>b) Evaluate if Access Log Reviews take place, who performs them, how issues requiring attention are identified, and what actions are taken when necessary.</li> </ul>

4. Audit of Investigative Procedures: The IS Auditor should focus on the following areas -

Area	Role of IS Auditor
Computer Forensics	<ul style="list-style-type: none"> <li>a) See if there are procedures for conducting Computer Forensics.</li> <li>b) Identify the tools and techniques available to the Entity for the acquisition and custody of forensic data.</li> <li>c) See whether any employees have received Computer Forensics Training and are qualified to perform Forensic Investigations.</li> </ul>
Security Investigations	<ul style="list-style-type: none"> <li>(a) Determine if there are any policies or procedures regarding Security Investigations, and their adequacy.</li> <li>(b) Examine the - (i) Authority for performing investigations, (ii) where information about investigations is stored, and (iii) to whom the results of investigations are reported.</li> </ul>
Computer Crime Investigations	<ul style="list-style-type: none"> <li>(a) See if there are policies, processes, procedures, and records regarding Computer Crime Investigations.</li> <li>(b) Examine how the results of internal investigations are reported to Regulatory / Law Enforcement Authorities and the consequent follow-up action thereon.</li> </ul>

5. Audit of Internet Points of Presence: The IS Auditor should perform a "points of presence" audit to identify what technical information is available about the Entity's Internet presence. This intelligence gathering includes the following -

Area	Role of IS Auditor
Need for Online Presence	<ul style="list-style-type: none"> <li>a) Examine the Entity's records to determine on what basis the Entity established online capabilities such as e-mail, Websites, e-commerce, Internet access for Employees, etc.</li> <li>b) Evaluate the need for online presence, whether as a Revenue or Support Model for the Entity's Business, or merely as a benefit for employees.</li> </ul>
Search Engines	<ul style="list-style-type: none"> <li>a) Refer to Google, Yahoo!, etc. to see what information about the Entity is available.</li> <li>b) Include the names of Company Officers, Key IT Persons, and any internal-only nomenclature (e.g. Specific Project Names, selected Confidential Information, etc.) in conducting such search.</li> </ul>

Social Networking Sites	a) Search sites like Facebook, LinkedIn, Twitter, etc. to see what present and ex-employees, and others are saying about the Entity. b) Search authorized or unauthorized "Fan Pages" to evaluate the type of information being shared/used.
Online Sales Sites	Search Online Sales Sites to see if anything related to the Entity is sold online, what type of product or other information is being shared therein, what is the sensitive nature of such information, etc.
Domain Names	a) See if there are any related Domain Names, and the registration and ownership details thereof. b) If the Entity does not own these related Domain Names, (e.g. .com, .org, .net, .biz, etc.), identify the contents of such related Domain Names, and its impact on the Entity's business.

B) Different Types of Digital Payments (2 marks each)

A. Traditional Methods:

Method	Description
Net Banking	1. Customers logs in to his / her Bank Account through a Desktop / Mobile Phone, and makes payments. 2. Appropriate Controls like User ID, Passwords, Limit on the amount of transactions, etc. are applicable.
Credit Cards	1. Credit Cards allow the Holder / User / Customer to purchase goods or services on credit. 2. User of the Card makes payment to Card Issuer / Bank at end of billing cycle, e.g. monthly. 3. Buyer's Cash Flow is not immediately impacted, and his Bank balance is not reduced immediately. 4. Credit Card Issuer charges its customers towards Card Issue, Transaction Fees, etc.
Debit Cards	1. Debit Cards allow the Holder / User / Customer to purchase goods or services and make a digital payment, out of his Bank Account. 2. On swiping the Card online and authorizing the transaction online, the Buyer's Bank Account is debited.
E-Wallets	1. Mobile Wallets (or Virtual Wallets or E-Wallets) stores payment card information on a Mobile Device. 2. Using Mobile Wallets, an User can make immediate payments to Merchants listed with the Mobile Wallet Service Providers. 3. Examples: PayTm, Freecharge, SBI Buddy, MobiKwick etc. (owned by Banks or by Private Companies).

B. New Methods:

Method	Description
IMPS	1. Immediate Payment Service (IMPS) is an instant inter-Bank Electronic Fund Transfer Service that can be transacted through Mobile Phones. 2. IMPS is also being extended through other channels such as ATM, Internet Banking, etc.
UPI Apps	1. Unified Payment Interface (UPI) is a system that powers multiple Bank Accounts (of Participating Banks), several banking services features like fund transfer, and merchant payments in a single mobile application. 2. UPI is a payment mode which is used to make fund transfers through the Mobile App. 3. Some examples of UPI Apps are BHIM, SBI UPI App, HDFC UPI App, iMobile, Phone Pe App, etc. 4. To transfer funds between two accounts using UPI Apps, the User must - (a) register for Mobile Banking to use UPI Apps, (b) download a UPI App and create a VPA or UPI ID, (c) transact in the specified manner.
Mobile Apps	1. BHIM (Bharat Interface For Money) is a Mobile App developed by the National Payments Corporation of India (NPCI) based on UPI. 2. BHIM facilitates e-payments directly through Banks and supports all Indian Banks which use that platform. 3. BHIM is built on the IMPS infrastructure and allows the User to instantly transfer money between the Bank Accounts of any two parties.
AEPS	Aadhaar Enabled Payment Service (AEPS) when introduced, seeks to allow bank to bank transactions, using a Customer's Aadhaar Number (which is linked to his Bank Account), to make payment to a Merchant.

USSD	<p>1. Unstructured Supplementary Service Data when introduced, seeks to make payments through Mobiles, without using any Internet or any Smart Phone.</p> <p>2. USSD Banking or *99# Banking is a mobile-banking based digital payment mode. User can use this service for many financial and non-financial operations such as checking balance, sending money, changing Mobile Banking Personal Identification number (MPIN) and getting Mobile Identifier (MMID).</p>
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## SECTION B: STRATEGIC MANAGEMENT (50 MARKS)

Question 1 is compulsory. Attempt any five from the rest

Question 1

A) Strategic Management-Meaning and Objectives (2 marks)

1. Meaning: Strategic Management refers to the Managerial process of -

(a) forming a strategic vision,

(b) setting objectives,

(c) crafting a strategy,

(d) implementing and executing the strategy, and

(e) initiating whatever corrective adjustments in the vision, objectives, strategy, and execution are deemed appropriate, over a period of time.

Note: According to Peter Drucker, "Strategic Management is not a box of tricks or bundle of techniques. It is analytical thinking and commitment of resources to action".

2. The objectives of Strategic Management are – (3 marks)

(a) To create Competitive Advantage so that the Company can gain advantage over competitors, and dominate the market.

(b) To guide the Company through all changes in the environment.

B) Competitive Intelligence

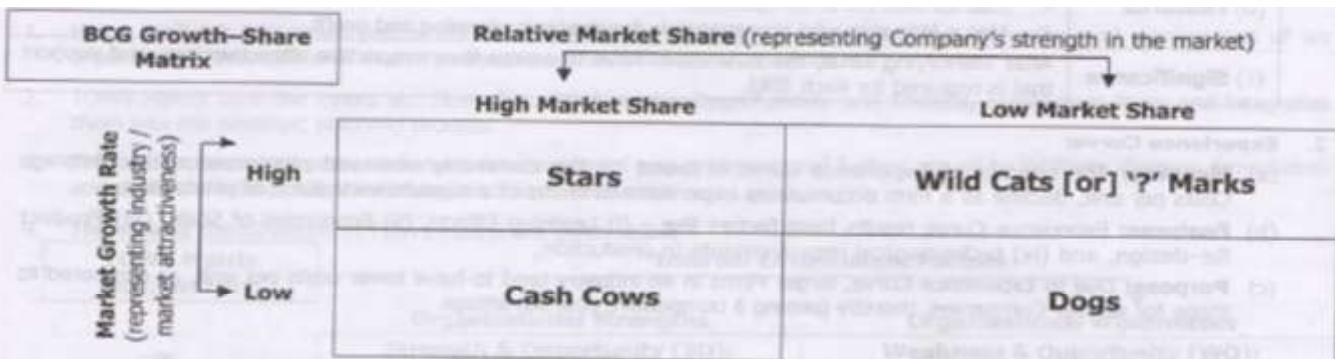
1. A Company can outperform its rivals only by monitoring their actions, understanding their strategies, and anticipating what moves they are likely to make next. (1.5 mark)

2. Competitive Intelligence about the strategies rivals are deploying, their latest moves, their resource strengths and weaknesses, and the plans they have announced is essential to anticipate the actions they are likely to take next, and what bearing their moves might have on a Company's own best strategic moves. (2 mark)

3. Competitive Intelligence can help a Company determine whether it needs to defend against specific moves taken by rivals or whether those moves provide an opening for a new offensive thrust. (1.5 mark)

### Question 2

- A) BCG Growth Share Matrix (2 marks for meaning, 2 marks for each stage)



**BCG – Concept**

<b>Stage 1</b>	Evaluation of relationships between Growth – Share.
<b>Stage 2</b>	Classification of SBUs into – (a) Stars, (b) Cash Cows, (c) Question Marks, and (d) Dogs.
<b>Stage 3</b>	Determination of Strategy – (a) Build, (b) Hold, (c) Harvest, and (d) Divest.

1. **Stage 1:** Under the BCG approach, a Company classifies its different businesses on a two-dimensional Growth–Share Matrix. In the matrix –
  - Vertical Axis represents **Market Growth Rate**, and provides a measure of **Market Attractiveness**.
  - Horizontal Axis represents **Relative Market Share** and serves as a measure of **Company Strength** in the market.
2. **Stage 2:** Using the BCG Matrix, Firms can identify 4 different types of products or SBUs, referred as –
 

Item	Features
(a) <b>Stars</b> – Products or SBUs that grow rapidly.	<ul style="list-style-type: none"> <li>• They need heavy investment to maintain their position and finance their rapid growth potential.</li> <li>• They represent <b>best</b> opportunities for expansion.</li> </ul>
(b) <b>Cash Cows</b> – Low-growth, high market share SBUs or products.	<ul style="list-style-type: none"> <li>• They generate cash and have low costs.</li> <li>• They are established, successful, and need less investment to maintain their market share.</li> <li>• In the long run, when the growth rate slows down, Stars become Cash Cows.</li> </ul>
(c) <b>Question Marks</b> or Problem Children or Wild Cats.	<ul style="list-style-type: none"> <li>• Low market-share business in high-growth markets.</li> <li>• They need heavy investments but have low potential to generate cash.</li> <li>• Question Marks if left unattended, are capable of becoming <b>cash traps</b>.</li> <li>• As growth rate is high, increasing the investments should be relatively easier.</li> <li>• Firms have to initiate action to convert "Question Marks" into "Stars", and then to "Cash Cows", when the growth rate reduces.</li> </ul>
(d) <b>Dogs</b> – Low-growth, low-share SBUs & products.	<ul style="list-style-type: none"> <li>• They may generate enough cash to maintain themselves, but do not have much future. Sometimes they may need cash to survive.</li> <li>• Dogs should be minimised by means of divestment or liquidation.</li> </ul>
3. Stage 3: After classifying the SBUs as above, the role of each SBU is determined on the basis of the following strategies. The four strategies that help to determine the role of SBUs are –
  - (a) **Build:** To increase market share, by foregoing short-term earnings in favour of building a strong future with large market share.
  - (b) **Hold:** To preserve market share.
  - (c) **Harvest:** To increase short-term cash flow, regardless of long-term effect.
  - (d) **Divest:** To sell or liquidate the business because resources can be better used elsewhere.

### Question 3

- A) Corporate Level Managers (1 mark for each point)
1. Corporate Level of Management consists of the Chief Executive Officer (CEO), other Senior Executives, the Board of Directors, and Corporate Staff.
  2. These individuals occupy the apex of decision-making within the Firm, with the CEO as the Principal General Manager.
  3. The role of Corporate-Level Managers is to oversee the development of strategies for the whole organization in consultation with other Senior Executives.
  4. This role includes defining the mission and goals of the organization, determining what businesses it should be in, allocating resources among the different businesses, formulating and implementing strategies that span individual businesses, and providing leadership for the organization.
  5. Role of a CEO: In particular, the main strategic responsibilities of CEO are -

- (a) Setting overall strategic objectives,
- (b) Allocating resources among the different business areas,
- (c) Deciding whether the Firm should divest itself of any of its businesses, and
- (d) Determining whether the Firm should acquire any new businesses,
- (e) Ensuring Shareholder Welfare.

**B) Concentric Diversification and Conglomerate Diversification**

Concentric Diversification (2 marks)	Conglomerate Diversification (2 marks)
<p>1. In this Strategy, the Firm adds a new business which is linked to the existing business through - (a) process, (b) technology, or (c) marketing.</p> <p>2. So, the new product is a spin-off from existing facilities, products and processes.</p>	<p>1. This involves entering into new businesses/ products, which are disjoined from the existing businesses/ products in every way.</p> <p>2. It is a totally unrelated diversification. There are no vertical or loop-like linkages with existing products/</p>

**Question 4**

**A) Setting Objectives**

Corporate Objectives flow from the "Mission" and "Vision" of the organisation. The Corporate Strategic Vision should be converted into objectives, i.e. specific performance targets, results and outcomes the management wants to achieve. (1 mark)

It serves the following purposes -(3 marks)

- 1. To provide the basis for major decisions of the Firm.
- 2. To provide basis for organizational performance to be achieved at each level.
- 3. To use objectives as yardsticks for tracking the Company's progress and performance.
- 4. To make the fullest utilization of the organizational resources,
- 5. To enable innovations and inventions, to improve the Firm's financial performance and business position.
- 6. To provide direction, allow synergy, aid in evaluation, establish priorities, reduce uncertainty, minimize conflicts, stimulate exertion, and aid in the allocation of resources and the design of jobs.

**B) Supply Chain Management**

**1. Supply Chain: (2 marks)**

- (a) Supply Chain refers to the linkages between - (i) Suppliers, (ii) Manufacturers, and (iii) Customers. Supply Chains involve all activities like sourcing and procurement of material, conversion, and logistics.
- (b) Planning and Control of Supply Chains are important components of its management. Management of Supply Chains includes closely working with Partners - Suppliers, Intermediaries, other Service Providers and Customers.

**2. Supply Chain Management: (2 marks)**

- (a) Supply Chain Management is defined as the process of planning, implementing, and controlling the Supply Chain operations. It is a cross-functional approach to managing the movement of Raw Materials into the Firm and the movement of Finished Goods out of the Firm towards the end-consumer with full focus on customer satisfaction.
- (b) Supply Chain Management encompasses all movement and storage of Raw Materials, WIP Inventory, and Finished Goods from point of origin to point of consumption.

**Question 5**

**A) Areas where HR Manager plays a Strategic Role (0.5 mark for each)**

- 1. Purposeful Direction: HR management should ensure that there is synchronization of the objects of the Firm and individuals working therein. All actions of Managers and Employees must be consistent with the corporate goals.
- 2. Core Competence: Core Competence is a unique strength of an organization, which may be in the form of human resources, marketing, capability, or technological capability. Core Competence ensures the gainful use of the limited resources of a Firm. This needs creative, courageous and dynamic leadership having faith in the Firm's human resources.
- 3. Competitive Atmosphere: HR Management should create a competitive atmosphere in the Firm, manned by a committed and competent workforce. This will ensure competitive advantage for the Firm.
- 4. Works Ethics and Culture: HR Management should try to develop a vibrant work culture -
  - (a) to create an atmosphere of trust among people, and

- (b) to encourage creative ideas by the people.
5. HR Empowerment: Empowerment means authorizing every member of a society or organization to take to his/her own destiny realizing his/her full potential. Thus, HR Management seeks to satisfy the self-esteem and self-actualization needs of employees.
6. Change Management: HR Management is responsible for maintaining the present situation, and also for ensuring growth and better performance by coping with the changes in the external environment.
7. Diversity Management: Workforce diversity can be observed in terms of male and female workers, young and old workers, educated and uneducated workers, professional and unskilled employees, etc. This brings out the need for higher degree of participation and avenues for worker's satisfaction, through various monetary and non-monetary incentives.

B) Transformational and Transactional Styles of Leadership (2 marks each)

1. Transformational Leadership Style:
- (a) Meaning: Transformational Leadership Style use charisma and enthusiasm to inspire people to exert them for the good of the Firm. They offer excitement, vision, intellectual stimulation and personal satisfaction. It inspires involvement in a mission, giving followers a 'vision' of a higher calling so as to elicit more dramatic changes in organizational performance.
- (b) Nature of Leadership: Transformational Leadership Style motivates followers to do more than originally affected to do by stretching their abilities and increasing their self-confidence, and also promote innovation throughout the organization.
- (c) Situations: This style may be appropriate in turbulent environments, in industries at the very start or end of their life-cycles, in poorly performing organizations when there is a need to inspire a company to embrace major changes. Transformational Leaders will challenge established paradigms and ways of working, and will be very useful during periods of uncertainty when people are generally feeling quite distressed.
2. Transactional Leadership style:
- (a) Meaning: Transactional Leadership Style focus more on designing steps and controlling the organization's activities and are more likely to be associated with improving the current situation. It tries to build on the existing culture and enhance current practices.
- (b) Nature of Leadership: Transactional Leadership Style uses the authority of its office to exchange rewards, such as pay and status. They prefer a more formalized approach to motivation, setting clear goals with explicit rewards or penalties for achievement or non-achievement for employees' work efforts and generally seek to enhance an organization's performance steadily, but not dramatically.
- (c) Situations: This style may be appropriate in settled environment, in growing or mature industries, and in organizations that are performing well. The style is better suited in persuading people to work efficiently and run operations smoothly.

Conclusion:

- Some researchers believe that leaders who rely too heavily upon charisma are not always effective in the long-term. This is because few individuals may be talented and energetic and are able to handle all types of business problems alone. They require people around them who are able support them, and who are prepared to tell them when things are going wrong.
- It can be concluded that there is no one single style of leadership suitable for all circumstances. Effective executives use a Leadership Style that is appropriate to the needs of the organization and its business situation.

Question 6

A) A. Concept of SBU (1 mark for each point)

Point	Description
Meaning of SBU	<p>A SBU is a single business or collection of related businesses, which -</p> <ol style="list-style-type: none"> <li>Offers scope for independent planning, and which might feasibly stand alone from the rest of the Firms.</li> <li>Has its own set of Competitors.</li> <li>Has a Manager, who has responsibility for strategic planning and implementation, and who has control over the resources and profit-influencing factors.</li> </ol>
Features of SBUs	<ol style="list-style-type: none"> <li>Planning: An SBU can be taken up for strategic planning distinct from the rest of the businesses. Products/businesses within an SBU receive same strategic planning treatment and priorities.</li> <li>Regrouping: The assortment of businesses/portfolios handled by a Company are analysed, segregated and regrouped into a few, well-defined, distinct, scientifically demarcated business units, assembled together as a distinct SBU.</li> <li>Identity: In the basic factors, viz. Mission, Objectives, Competition and Strategy - each SBU will be distinct from another. Each SBU is thus, a separate business.</li> <li>Unrelated: If unrelated products/ businesses could be assigned to any other SBU applying the criterion of functional relation, they are assigned accordingly, otherwise they are made into separate SBUs.</li> <li>Competition: Each SBU will have its own distinct set of competitors and its own distinct strategy to deal with rivals.</li> <li>Manager: Each SBU will have a Head/ Incharge (CEO), who will be responsible for strategic planning and profit performance.</li> </ol>
Advantages of SBU Concept	<ol style="list-style-type: none"> <li>Scientific: It is a scientific method of grouping the businesses of a multi-business Firm.</li> <li>Improvement: It is an improvement over the territorial grouping of businesses and strategic planning based on territorial units.</li> <li>Clarity: Grouping the businesses into SBUs help the Firm in strategic planning, by removing the vagueness and confusion in grouping.</li> <li>Resource Allocation: It facilitates the right setting for correct strategic planning and facilitates correct relative priorities and resources to the various businesses.</li> </ol>
Relation between all SBUs of a Firm	<p>In spite of maintaining its own identity, there may be relatedness between SBUs. Such relatedness may arise due to the following factors -</p> <ol style="list-style-type: none"> <li>Technology/ Products: SBUs might be based on similar technologies or all provide similar sorts of products or services.</li> <li>Customers: SBUs might be serving similar or different markets. Even if technology or products differ, it may be that the customers are similar.</li> <li>Competencies: The core competencies of SBUs may be similar, leading to overall competitive advantage, e.g. superior R&amp;D team in each SBU, innovative marketing methods in all SBUs etc. The competitive advantage of different SBUs that are built, have similarities.</li> </ol>

B) Generally, Mission and Purpose are used together in the context of Business Policy, but the following distinctions can be drawn between them – (2 marks for each)

Mission	Purpose
1. It refers to statements which defines the role that an organization plays in the society.	1. It refers to anything which an organization strives for.
2. It strictly refers to the particulars needs of the society, e.g. quality products / services.	2. It relates to what the organization strives to achieve in order to fulfill its mission to the society .

Example:

- Mission: Satisfying the information needs of the society.
- Purpose: A Book Publisher may produce good books and materials to meet the above Mission, but a News Magazine here the Mission is identical, but purposes are different.

Question 7

A)

1. Mission is the answer to the question "What business is the Company doing"? (1 mark)

2. Features: (3 marks)
- It is an expression of the growth ambition of the Firm, i.e. grand design of the Firm's future.
  - It satisfies the Firm's presence and existence, i.e. what purpose it seeks to achieve as a Business Firm.
  - Corporate Vision is expressed /spelt out through the Mission. Vision comes alive, through the Mission.
  - It is a Firm's guiding principle, common purpose which the entire Firm shares and pursues.
  - It is the foundation from which the network of corporate aims is built.
  - It is a proclamation to insiders and outsiders as to what the organization stands for.

- B) New Entrants: New Entrants provide competition in the form of - (a) more capacity, (b) new product version / range, and (c) lower prices and cheaper substitutes. The threat of new Entrants will be reduced, if there are Barriers to Entry in the Industry. The impact of Barriers to Entry is summarised below – (0.5 mark for each point)

Aspect	Strong Competitive Force (Low Profits), if-	Weak Competitive Force (High Profits), if-
Capital Investment	If a new Firm can be set up with minimal Capital Investment, it increases the number of New Entrants, leading to higher competition.	If huge amount of investment is required to set up a New Firm, there is a barrier to entry. Hence, Profits of existing Firms are not reduced.
Product Differentiation	If products and services can be differentiated easily, New Firms can enter easily, causing more competition and lower profits.	If New Firms have to spend substantially to create product differentiation, there is a barrier to entry. Existing Firms continue to earn higher profits.
Brand Identity	If the impact of Brand on Buyer behaviour is less, new Firms which do not have any Brand Identity initially, can easily enter the market, leading to higher competition.	If buying preferences are heavily inclined towards Branded Products, it constitutes an Entry Barrier for New Firms who do not have Brand Advantage. This increases the profits of the existing Firms.
Output Levels / Scale	If the industry deals in products with low volume and high margins, New Firms can easily enter the industry. This affects the profits of existing Firms which have invested huge amounts.	If the industry deals in High Volume-Low Margin products, New Firms will hesitate to enter since it will take time for them to achieve high levels of output, and economies of scale.
Switching Costs for Buyer	If a Buyer can easily switch over from one Seller to another (e.g. Tooth Brush), New Firms are attracted to enter the market.	If Buyer has higher costs of switching over from one Seller to another (e.g. Change in Operating System of Computers), this acts as an Entry Barrier for new Firms.
Distribution Patterns	If Distribution Channels in the industry are easily accessible to New Firms also, it attracts more competition, leading to lower profits of Firms.	If existing Firms in the Industry have full control over the Distribution Network and New Firms have difficulty of access thereto, it acts as an Entry Barrier.
Acts of Existing Firms	If New Firms are not affected by Price Reduction measures of existing Firms, it increases the element of competition, and thus lower profits.	If existing Firms can react aggressively to the entry of a New Firm (e.g. by drastic reduction of prices, new product version, etc.), it acts as an Entry Barrier.