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Further, in the Elective Papers which are Case Study based, the solutions have been worked out on the basis of certain assumptions/views derived from the facts given in the question or language used in the question. It may be possible to work out the solution to the case studies in a different manner based on the assumptions made or views taken.

PAPER-6A – RISK MANAGEMENT

The Question Paper comprises five case study questions. The candidates are required to answer any four case study questions out of five.

Answers in respect of Multi Choice Questions are to be marked on the OMR answer sheet only.

Answer to other questions to be written on the descriptive type answer book.

Answer to MCQs, if written in the descriptive type answer book will not be evaluated.

Please ensure to answer the MCQs relevant to questions attempted in descriptive answer book.

Candidates may use calculator.

CASE STUDY -1**INTRODUCTION**

Alpha Mining Ltd. (AML) is a big player in mining industry in India. Currently there is no formal risk management process in the company and is more regulatory focused. The Chief Financial Officer (CFO) is responsible for risk management activities also; The board of AML believes that in the current environment of mounting economic, regulatory, and marketplace pressures and constant technological disruption, virtually all industries face increasing strategic risk and so is the case of AML. The board is concerned that the same is not being managed properly currently and has asked the CFO to make a presentation in this respect.

OBSERVATIONS BY THE BOARD

- 1. In fact, in a recently concluded board meeting the chairman of the board wanted to know whether risks of AML are being managed to a high standard. Further, the rising number of litigations against AML is cause of concern especially considering the fact that there is no policy framed by the board in this respect. Such risks are not only increasing operational risks of AML but also there is potential for misrepresentation in the financial statement. The board has also expressed its concerned about the manner in which settlements against litigations are negotiated.*
- 2. Mr. S Lal who has been recently inducted on the board and is a recognised expert in risk management has suggested that the primary way to receive assurance will be through confidence that AML has an effective risk appetite framework.*
- 3. During the board meeting, the CFO of AML informed the board that AML has undergone an extensive performance audit by the regulator and numbers of observations have been made by them on environmental issues.*
- 4. AML has in place information security policy but the internal auditors have pointed out number of breaches including breaches by end users.*

5. *Improving risk management framework is the key agenda for the board and the CFO has been authorized to take external help in this respect.*

ACTIONS TAKEN ON THE DIRECTIONS GIVEN BY THE BOARD

1. *Considering the various issues raised by the regulators and the board, the CFO hired a risk management consulting firm. The risk management consultant has advised for the development of a risk management framework and Risk Appetite Statement (RAS) in order to articulate AML's risk position on all key risks including human health and the environment in contaminated environments. He further advised that by developing a risk management framework, AML would be able to state its accepted level of risk relating to managing the environmental audits it conducts and would be conscious when making decision to either accept or manage risk more effectively and efficiently.*
2. *The consultant has also advised to express risk appetite into number of key areas to align with statutory responsibilities and strategic objectives of AML. In addition to this, the consultant also wants AML to focus on 'soft elements' identified by them that would influence the risk appetite. In a nutshell, he advised to define risk capacity in order to ensure that AML is remaining within constraints implied by its regulatory obligations, state its risk appetite and specific desires to achieve AML's objectives and distinguish limits and thresholds for its key risk categories and dimensions.*
3. *The internal auditors have suggested that issues relating to breaches by end users are to be addressed more appropriately in the information security policy especially covering end user computing (this refers to computing facilities made available to users based on the business requirements for accessing and/or processing the information independently), internet and email usages.*

Multiple Choice Questions

Choose the most appropriate answer from the answer options:

- (1.1) *Risk appetite, (2) risk capacity, (3) risk target, (4) risk tolerance and (5) risk limits are closely associated in risk management. Which one of the following arrangement shows the correct sequence in risk management in practice?*
 - (A) 1-2-3-4-5
 - (B) 2-1-4-3-5
 - (C) 3-1-2-5-4
 - (D) 4-1-3-2-5
- (1.2) *Which one of the following is incorrect about the strategic risks?*
 - (A) *Unique to the organization.*
 - (B) *Damaging to the entire organization.*

- (C) *Associated with primary objectives of the organisation.*
- (D) *Easy to address with customary risk management methods.*
- (1.3) *While considering risk and uncertainty, the risk management team must be aware of that:*
- (A) *Risk assessment is the sole method of reducing uncertainty.*
- (B) *Risk can apply to both opportunities and threats.*
- (C) *Uncertainty should always be considered completely separate from risk.*
- (D) *Uncertainty should only be considered when reviewing long-term objectives.*
- (1.4) *The Board of AML has asked your help so as to decide which type of risk framework is expected to improve efficiency by aligning strategy, processes, technology and people ?*
- (A) *Controls, risk and supervision.*
- (B) *Corporate governance and control.*
- (C) *Governance, risk and compliance.*
- (D) *Supervision, audit and compliance.*
- (1.5) *One of the board members raised the question about potential benefits of the risk management to AML. Which one the following is not the potential benefits of risk management ?*
- (A) *Reduced cost of capital.*
- (B) *More effective resource allocations.*
- (C) *Increased understanding of entity objectives.*
- (D) *Decreased inherent risk.* **(2 x 5 = 10 Marks)**

Descriptive Questions

- (1.6) *Describe any three 'soft elements' that in your opinion influence the risk appetite of an organization.* **(6 Marks)**
- (1.7) *What are the advantages of viewing strategic risks as dynamic processes in an organisation ?* **(3 Marks)**
- (1.8) *While framing the Policy on Management of Litigation, what are the important factors which AML should consider for negotiating settlement so that operational risk arising from litigations can be minimised ?* **(2 Marks)**
- (1.9) *While assuming ownership of information assets, what are the points relating to end users that you would consider in the information security policy which the end users in general and particular for internet and email usages would be required to adhere to ?* **(4 Marks)**

Answer**Multiple Choice Questions**

1.1 (B)

1.2 (D)

1.3 (B)

1.4 (C)

1.5 (D)

Descriptive Questions

1.6 Following are the 'soft' elements that influence the risk appetite of an organization:

- **Risk attitude** – This can be described as an organization's or individual's attitude towards risk-taking. One's attitude may be described as risk averse, risk-neutral, or risk-seeking.
- **Risk culture** – Risk culture as the norms of behaviour for individuals and groups within an organization that determine the collective ability to identify and understand, openly discuss and act on the organizations current and future risk.

(Or)

Risk culture means that all levels of the organisation from the junior most to the Chief Executive understand and appreciate the positive and negative results that a risk event can bring.

(Or)

Risk culture is “the combined set of individual and corporate values, attitudes, competencies and behaviour that determine a firm's commitment to and style of Operational Risk Management.”

- **Risk perception** – Belief (whether rational or irrational) held by an individual, group, or society about the chance of occurrence of a risk or about the extent, magnitude, and timing of its effect(s).

1.7 Viewing strategic risks as dynamic processes in an organization ensures:

- ❖ Treatment of root cause analysis rather than use of temporary methods to fix the symptoms.
- ❖ Anticipating the emerging risks.
- ❖ Focusing on areas of high importance.
- ❖ Converting challenges into opportunities.

1.8 While framing the policy on Management of Litigation, the following factors should be considered for negotiating settlement by AML so that operational risk arising from litigation can be minimized:

- Merits of the claims,
- SWOT analysis of the case,
- Costs of litigation
- Opportunity cost of settlement.
- Ensuring proper due diligence before entering into a contract.
- Clearly identifying each and every term of the contract

1.9 *General Requirements*

- (a) Sign a confidentiality agreement for non- disclosure of confidential data.
- (b) No use of information assets for personal use and non-job related activities without authorisation in writing.
- (c) Non recording or processing of information that knowingly infringes any patent or breaches any copyright.
- (d) Responsibility for protecting the information assets against unauthorized access and misuse.

Internet Use

To ensure that while browsing/downloading/uploading/accessing any information through internet facility available to employees on computing devices the security policy of Alpha is not violated.

E-mail

To ensure the company provided electronic mail facility is not misused and users owning the email account will be completely responsible for emails originated from their accounts. No official data/documents can be sent using public email unless authorization for the same is taken.

Alternative Solution

Points to be considered for information security relating to end users in general and particularly for internet and e-mail usages are as follows:

General usage:

- (i) End users are expected to adhere to the organisation's Code of Conduct that has a significant section on confidentiality and protection of data, broadly covering information security aspects.

- (ii) End users must undergo the mandatory training depending on their roles and exposure.
- (iii) Installation of software without the proper permission in the computer systems or laptops of company should be prohibited.
- (iv) Frequently changing the passwords.

Internet usage:

- (i) Internet should be used responsibly and productively. The use should be for job related work and use for personal purpose should not be permitted.
- (ii) The equipment, services and technology used for internet are property of the firm and hence the traffic and data accessed should monitored at regular intervals.
- (iii) Websites and downloads should be monitoring on regular basis. If required, sites should be blocked if not meant for useful for company.

Email usage:

- (i) E-mail contents should not contain anything which deemed to be offensive. The language should not also be vulgar or harassing.
- (ii) Not to open Spam E-mails.

CASE STUDY - 2

INTRODUCTION

Star Pharma is a leading player in the pharmaceutical industry. It is an integrated global pharmaceutical company engaged in the development, manufacturing, marketing, sale and distribution of generic, brand pharmaceutical and over the counter (OTC) products. The Company competes with different companies depending upon product categories, and within each product category, upon dosage strengths and drug delivery systems. Such competitors include the major brand name and generic and OTC manufacturers of pharmaceutical products. In addition to product development, other competitive factors include product quality and price, reputation and service and access to proprietary and technical information.

Star Pharma has commercial operations in a number of established international markets with the opportunity for rapid growth in many emerging markets around the world. The chief operating officer (COO) believes that a global presence will allow the company to expand revenue base and manage risk through diversification. The COO and his team is expecting to capitalize on opportunities for growth within new markets that have opened up after the COVID-19.

The company has set a separate treasury in order to manage the forex risk and is headed by Chief Financial Officer (CFO). Two employees have been hired to monitor forex positions, exchange rates and use appropriate hedge products.

ISSUES FACED BY STAR PHARMA

1. *Star Pharma has several OTC brands that are hugely popular in the market. In recent time quality issues have been raised by a significant number of customers. The management investigation in the matter has revealed that this happened because of weak control over the raw materials. In fact, audit team identified many more operational risks issues including the gaps in the procurement system. Frequent rejections in highly competitive OTC products segment have exposed the company to reputational risk.*
2. *As the Company operates on a global basis with offices or activities in Europe, Africa, Asia, and North America, it faces several risks inherent in conducting business internationally, including compliances. These laws and regulations include data privacy requirements, labor relations laws, tax laws, anti-competition regulations, import and trade restrictions, export requirements etc. Given the high level of complexity of these laws, however, there is a risk that some provisions may be inadvertently breached. Violations of these laws and regulations could result in fines, criminal sanctions against the Company, officers or employees, and prohibitions on the conduct of our business. Any such violations could also include prohibitions on products in one or more countries and could materially damage reputation, brand, international expansion efforts, and ability to attract and retain employees, business and operating results. The management believes that success depends, in part, on their ability to anticipate these risks and manage these difficulties.*
3. *In addition to the foregoing, engaging in international business inherently involves a number of other difficulties and risks such as longer payment cycle, potentially adverse tax consequences, tariffs, customs charges, bureaucratic requirements and other trade barriers, difficulties and costs of staffing and managing foreign operations. These factors or any, combination of these factors may adversely affect revenue or overall financial performance of Star Pharma.*
4. *Star Pharma has now started using extensively online mode of order taking, payment and delivery. The company has hired number of vendors for this purpose. The operating model has now been completely revamped. The company has now created data base of customers which helps in marketing new products. This has started showing results but has also exposed the Company with new risks including cyber risks. Recently, the Company was attacked by Malware which affected the operations of the Company for one day. Cyber security was not an agenda in the past. But with change in the operating model this has become one of the key risk of Star Pharma. The Board believes that now the Company will have to invest in cyber security to minimize the possibility of a having a cyber-loss and make the Company cyber resilient. For this reason they want a comprehensive review of Business Continuity Planning (BCP).*
5. *Currently Star Pharma has risk management system in place but it is not integrated. In other words it is looking for a unifying philosophy that draws together management of all types of risks. The Board wants that risk management team must look at the risks that could affect the core process or stakeholder expectation on an enterprise-wide basis. The*

Board is fully aware that risk management has become more important because of increasing stakeholder expectations and the ever-increasing ease of communication. The Board wants to be confident that risks have been identified and that appropriate steps have been taken to manage risk to an appropriate level. Also, there is greater emphasis on accurate reporting of information by organizations, including risk information. In this backdrop, implementation of enterprise risk management (ERM) is being evaluated. While the management agrees with the need of ERM they are yet to take decision considering the cost involved in this decision.

Multiple Choice Questions

Choose the most appropriate answer from the answer options:

- (2.1) *Control Risk Self-Assessment (CRSA) is a powerful tool that may be used to support ERM. Which one of the following is incorrect with respect to ERM and CRSA ?*
- (A) *ERM covers all risks whereas CRSA covers specific risks.*
 - (B) *CRSA is driven by risk policy whereas ERM is driven by desire for improved operations.*
 - (C) *ERM is mainly risk concepts for entire operations CRSA is mainly workshops on risk and controls.*
 - (D) *CRSA is based on local risk registers whereas ERM is based on corporate risk reporting system.*
- (2.2) *As a part of the treasury team of AML, the CFO has asked you to do hedging by borrowing foreign currency, converting it to domestic currency, and investing the domestic currency. Which one of the following derivatives is close to the above mentioned activities ?*
- (A) *Forward purchase contract.*
 - (B) *Option contract.*
 - (C) *Interest rate swap.*
 - (D) *Currency swap.*
- (2.3) *During the review of receivables, the CFO found that a bill amounting to GBP 10,00,000 was overdue for payment for more than 30 days. The CFO has asked you to verify whether the overdue bill has been crystallized by the Authorised Dealer by applying correct exchange rate. Which one of the following is the correct exchange rate for crystallization of the overdue export bills ?*
- (A) *Bill selling rate*
 - (B) *TT selling rate*
 - (C) *FC selling rate*

(D) TT buying rate

(2.4) Star Pharma is expecting EUR 5 million in six months' time and the treasury has decided to carry out cross-hedge. Which one of the following explains the cross-hedge?

(A) It involves the use of forward contracts, a combination of spot and market and money market transactions, and other techniques to protect from foreign exchange loss.

(B) It is a technique designed to hedge exposure in one currency by the use of futures or other contracts on another currency that is correlated with the first currency.

(C) It involves an exchange of cash flows in two different currencies between two companies.

(D) It involves a loan contract and a source of funds to carry out that contract in order to hedge transaction exposure.

(2.5) The CFO of Star Pharma has asked the treasury team to negotiate a forex swap with the bank. In this context, what type of forex-swap is to be negotiated when it is to be done from tomorrow until the next date ?

(A) Tom-next

(B) Spot-next

(C) Cash-next

(D) Forward-next

(2 x 5 = 10 Marks)

Descriptive Questions

(2.6) In the changed business model, the management of Star Pharma has identified vendor risk management as the key area of cyber security risk management. In the light of this what would be your suggestions to the Company for vendor risk management ? **(4 Marks)**

(2.7) What are the two defining characteristics of cyber-resilient organization ?

What is 'Reverse Stress Testing' in case of a cyber-resilient organization? **(3 Marks)**

(2.8) You are required to prepare a short note for the board explaining what the ERM is and list its features of so that the board can take a decision about the implementation of the same. Also, explain how ERM is linked with the BCP? **(6 Marks)**

(2.9) The treasury team of Star Pharma has been using forward contracts as tool to hedge forex risks. The CFO is not satisfied with this after the performance review of the treasury function. Prepare a note for CFO listing advantages of a 'currency option contract' as a hedging tool compared with the 'forward contract'. **(2 Marks)**

Answer**Multiple Choice Questions**

2.1 (B)

2.2 (A)

2.3 (B)

2.4 (B)

2.5 (A)

Descriptive Questions**2.6 Suggestions for Vendor Risk Management**

- (i) Vendor contract should include information security requirements, specific responsibilities and consequences for unauthorized access to information of the company.
- (ii) Evaluate, assess, approve, review control and monitor the risks and materiality of vendors and ensure that they are in sync with the information security policy of the company.
- (iii) In the SLA (Service Level Agreement) legal and regulatory requirements including data protection, intellectual property rights and copyrights should be included.
- (iv) SLA shall include confidentiality including background check clause and credentials of vendor personnel accessing and managing critical data shall be maintained and monitored.

Alternative Solution

There are several specific aspects that need to be looked into Vendor Risk Management are as follows:

- ❖ Clearly defined objective of outsourcing; this has to be brought into the scope of work;
- ❖ Contractual documentation to be adequate to ensure the service provider does only what is assigned and to the standard mutually agreed to by all parties involved;
- ❖ Legal indemnities to the organisation to be assessed while hiring a service provider;
- ❖ In agreements where the client and the service provider are in different states or in different countries, the respective countries' or states' laws have to be complied with;
- ❖ The BCP of the service provider has to be reviewed.
- ❖ The operational risk assessment covering regulatory risks, financial risk, financial reporting risk and other risks as delivery to end customers of the client in case the service provider fails to deliver for whatever reason.

- ❖ If technology or its disaster recovery itself is outsourced, all the attention is required to ensure the business operations work as designed and agreed.
- ❖ Works should be allocated to only authorized and approved vendors only.
- ❖ Vendors should not be allowed to have unauthorized access to data.

2.7 Both the disruption duration and the operational restoration time are basic defining characteristics of resilience.

A cyber-resilient organization should know just how bad a cyber-attack would need to be to threaten its viability, or to have its credit rating downgraded. This is called reverse stress testing. Through systematic reverse stress testing, measures can be developed to protect a corporation against such unacceptable outcomes.

Alternative Solution

Defining characteristics of cyber-resilient organization are as follows:

- Identification of risk areas: whether it is own or outsourced network, internet, individual computers, mobile devices etc. Prioritization of resources and effort can be managed accordingly.
- Adequately restricting access to systems is the common way to prevent cyber risk; this is done by password protection at various levels, from common user to administrator level.
- Encryption solutions on individual computers is also done in a manner that if lost, the unauthorised entity cannot download the data into an external storage device.
- There are several technology solutions that create an adequate firewall of the organisation's systems to protect them from hacking from outside.
- A regular vulnerability testing of the firewall and periodic review to upgrade it is one of the main tasks of the information security manager. Detection of a test-attack is very important part of the preventive mechanism; an attacker may attempt to cause a minor violation to test the organisation's network security before causing a major incident.
- A response strategy to a cyber-attack incident is also important as part of risk management. The measures to prevent or mitigate customer disputes, legal indemnities, assess and minimize the financial impact of a cyber-attack, and governance over decision making and investments to restore the system functionalities to its secure state, are all important considerations. The root cause of these incidents and the impact have to be adequately documented.

Like some institutions failed during global financial crises, this period represented stress to default scenario. It involves extremely unlikely events which force the companies to think about the firm's most serious vulnerabilities and design stress to default scenarios accordingly.

- 2.8** Enterprise risk management (ERM) is a strategic business discipline that supports the achievement of an organisation's objectives by addressing the full spectrum of its risks and managing the combined impact of those risks as an inter-related risk portfolio.
- ❖ Encompasses all areas of organisational exposure to risk (financial, operational, reporting, compliance, governance, strategic, reputational, etc).
 - ❖ Prioritises and manages those exposures as an inter-related risk portfolio rather than as individual 'silos' of risk.
 - ❖ Evaluates the risk portfolio in the context of all significant internal and external context, systems, circumstances and stakeholders.
 - ❖ Recognises that individual risks across the organisation are interrelated and can create a combined exposure that differs from the some of the individual risks.
 - ❖ Provides a structured process for the management of all the risks, whether those risks are primary quantitative or qualitative in nature.
 - ❖ Seeks to embed risk management as a component in all critical decisions throughout the organisation.
 - ❖ Provides a means of the organisation to identify the risks that it is willing to take in order to achieve strategic objectives.
 - ❖ Constructs a means of communicating on risk issues, so that there is a common understanding of the risks faced by the organisation, and their importance.
 - ❖ Supports the activities of internal audit by providing a structure for the provision of assurance to the board and audit committee.
 - ❖ Views the effective management of risk as a competitive advantage that contributes to the achievement of business and strategic objectives.

Alternative Solution for above portion

Enterprise risk management (ERM) is a plan-based business strategy that aims to identify, assess and prepare for any dangers, hazards and other potentials for disaster – both physical and figurative – that may interfere with an organization's operations and objectives.

The various features of ERM are as follows:

- Determining the risk appetite.
- Establishing an appropriate internal environment, including a risk management policy and framework.
- Identifying potential threats to the achievement of its objectives and assessing the risk, i.e., the impact and likelihood of the threat occurring.
- Undertaking control and other response activities.

- Communicating information on risks in a consistent manner at all levels in the organization.
- Centrally monitoring and coordinating the risk management processes and the outcomes, and
- Providing assurance on the effectiveness with which risks are managed.

Relationship between ERM and BCP

There is an important relationship between ERM and BCP. The risk assessment that is required as part of the risk management process and the business impact analysis that is the basis of business continuity planning (BCP) are closely related. The normal approach to risk management is to evaluate objectives and identify the individual risks that could impact these objectives. The output from a business impact analysis is the identification of the critical activities that must be maintained for the organization to continue to function.

It can be seen that the ERM approach and the business impact analysis approach are very similar, because both approaches are based on the identification of the key dependencies and functions that must be in place for the continuity and success of the business.

The next activity differs between ERM and BCP, because the former is concerned with the management of the risks that could impact processes, whereas business continuity is concerned with actions that should be taken to maintain the continuity of individual activities.

The business continuity approach, therefore, has the very specific function of identifying actions that should be taken after the risk has materialized in order to minimize its impact.

BCP relates to the damage-limitation and cost-containment components of the loss control. BCP as a part of operational risk should always be part of the ERM and should be managed separately.

- 2.9** Though the option contract involves upfront payment of premium which is not involved in Forward Contract but the main advantage of using options contracts for hedging is that the Star Pharma can decide whether to exercise options after observing the realized future exchange rate or not.

Contrary to that in Forward Contract Star Pharma has no choice. Option provides a hedge against ex post regret for taking forward position if not proved in favour. Thus, with option contract Star Pharma can eliminate the downside risk while retaining the upside potential.

CASE STUDY - 3

INTRODUCTION

Mr. Shyam, an entrepreneur, came across the Taxation Laws (Amendment) Act, 2019 which offered a low tax rate of 15% (plus surcharge and cess) to new manufacturing companies, subject to fulfilment of certain conditions. After thinking over, he consulted his like-minded business colleagues and decided to commence a new manufacturing public limited company.

They also agreed to Mr. Shyam's proposal and agreed to be promoters of the company along with him. They discussed various modalities and procedures involved in commencement of the company.

DISCUSSIONS OF THE PROMOTERS

- (i) They had two alternatives, i.e., to pursue Project X (manufacturing Product A) or Project Y (manufacturing Product B). The following are the data for both the Projects with five possible events:

Possible Event	Project X		Project Y	
	Cash Flow (₹ 000)	Probability	Cash Flow (₹ 000)	Probability
L	18,000	0.22	28,000	0.25
M	16,000	0.18	25,000	0.19
N	21,000	0.14	29,000	0.16
O	19,000	0.25	27,000	0.24
P	22,000	0.21	16,000	0.16

- (ii) The promoters are very much aware that the activities, whether financial or non-financial, would get affected by the external environments. They want to have a comprehensive understanding of the significant factors and the aspects underlying the same.
- (iii) The above referred Act allowed the import of new machinery which can be used in the manufacturing of the product.
- (iv) The promoters are convinced that the risk management is one of the important pillars of Governance and arguably the only tool to deal with business uncertainty. Risk management is recognised as an integral component of good management and governance. It is an iterative process consisting of steps, which, when undertaken in sequence, enable continual improvement in decision making.
- (v) Right from day one, they wanted to go in for the implementation of Enterprise Risk Management (ERM) which is a tool that assists an organisation in meeting its business objectives.
- (vi) They want to employ a team of internal auditors i) for the audit of internal controls to ensure that they are meticulously designed and operate efficiently ii) look into the risk governance framework established by management to confirm that they operate as intended and iii) monitor constantly the risk management program for its effectiveness and improvements.
- (vii) The promoters are also aware that as public limited company of a particular size, it has to comply with more number rules and regulations than a private limited company especially in reporting of internal financial controls over financial reporting.

- (viii) *Today's business is constantly changing and seems to become more complex every day. Therefore, the decisions of the management involve the recognition of risk and opportunity.*
- (ix) *They also agreed to consider exporting the products manufactured by the proposed company, after exploring the market feasibility. Few spare parts for imported machinery will have to be paid in foreign exchange only. Mr. Shyam is made in-charge to handle the foreign exchange transactions for the same.*
- (x) *The promoters realised the importance of Information Technology (IT) and its pivotal role in the business. IT is no longer an enabler, but it has now become the driver of business.*
- (xi) *The proposed company, Shyam Polyfibres Limited (SPL) would have to face challenges such as, i) finding out enough finances to commence and run the company, ii) proper planning, iii) employing qualified and dedicated workforce, iv) stiff competition etc. The promoters are aware of these issues and have decided to boldly face and resolve them by proper planning.*
- (xii) *SPL would use a Risk Monitoring Tool (RMT) to track progress of risk management using qualitative assessment of probability and impact of risk.*
- (xiii) *In order to predict the sales of the proposed manufacturing of the new product, SPL would use a computer software that generates thousands of possible outcomes from the distribution of inputs which are specified by a user.*

Multiple Choice Questions

Choose the most appropriate answer from the given options.

- (3.1) *During the execution of the project of SPL, a new risk was identified, which was not identified earlier in the Risk Identification exercise. Which of the following would not potentially enable a new risk to be identified?*
 - (A) *Running some trend analysis reports to analyse incidents.*
 - (B) *Recording incidents in a register.*
 - (C) *Conducting root cause analysis.*
 - (D) *Flow-charting the significant business processes.*
- (3.2) *The auditor of SPL is trying to discharge his liability on the company's Internal Financial Controls over Financial Reporting in an IT environment. He is assessing the strength of the control environment used in the automated control activities. For ensuring timeliness, accurate and reliability of the information used in the financial control, the auditor most likely would focus his attention on the underlying:*
 - (A) *Application systems*
 - (B) *Operating systems*
 - (C) *Financial reports*

- (D) Database management systems.
- (3.3) SPL most likely would have employed which of the following in the software referred to in item (xiii) of the 'outcome of discussion of the promoters' ?
- (A) Bootstrap Simulation
 - (B) Monte Carlo Simulation
 - (C) Historical Simulation
 - (D) Linear Simulation
- (3.4) In the context of ERM, proposed to be implemented by SPL, which of the following would best refer to a 'hazard risk'?
- (A) Risk associated with the strategic planning of the company.
 - (B) Risk associated with the operations of the company.
 - (C) Adverse financial losses of the company those are associated with pure risks.
 - (D) Adverse financial losses of the company those are associated with diversifiable risks.
- (3.5) The RMT employed by SPL is known as:
- (A) Risk Event Maps
 - (B) Risk Scorecards
 - (C) Risk Heat Maps
 - (D) Flow Charts with Risk Flags
- (2 x 5 = 10 Marks)**

Descriptive Questions

- (3.6) Calculate Coefficient of variation of Project X and Project Y and suggest which Project should be undertaken by the promoters. Show your workings. **(6 Marks)**
- (3.7) 'External environment can affect the company directly or indirectly.' Examine the statement by discussing various aspects of the significant factors affecting the external environment which in turn could affect SPL's ability to create value in the short, medium and long term. **(5 Marks)**
- (3.8) What is foreign exchange exposure and discuss foreign exchange exposures that SPL might face in its proposed transactions ? **(4 Marks)**

Answer**Multiple Choice Questions**

- 3.1 (D)
3.2 (A)

3.3 (B)

3.4 (C)

3.5 (C)

Descriptive Questions

3.6 To calculate CV first we shall compute Variance and Standard Deviation of each project as follows:

(i) Calculation of Variance and Standard Deviation of Project X

Expected net cash flow

$$= (0.22 \times 18000) + (0.18 \times 16000) + (0.14 \times 21000) + (0.25 \times 19000) + (0.21 \times 22000)$$

$$= 3960 + 2880 + 2940 + 4750 + 4620$$

$$= 19150$$

$$\text{Variance } (\sigma^2) = 0.22 [18000 - 19150]^2 + 0.18 [16000 - 19150]^2 + 0.14 [21000 - 19150]^2 + 0.25 [19000 - 19150]^2 + 0.21 [22000 - 19150]^2$$

$$\sigma^2 = 290950 + 1786050 + 479150 + 5625 + 1705725$$

$$\sigma^2 = 4267500$$

$$\text{Standard Deviation } (\sigma) = \sqrt{4267500} = 2065.79$$

(ii) Calculation of Variance and Standard Deviation of Project Y

Expected net cash flow

$$= (0.25 \times 28000) + (0.19 \times 25000) + (0.16 \times 29000) + (0.24 \times 27000) + (0.16 \times 16000)$$

$$= 7000 + 4750 + 4640 + 6480 + 2560$$

$$= 25430$$

$$\text{Variance } (\sigma^2) = 0.25[28000 - 25430]^2 + 0.19[25000 - 25430]^2 + 0.16[29000 - 25430]^2 + 0.24 [27000 - 25430]^2 + 0.16[16000 - 25430]^2$$

$$\sigma^2 = 1651225 + 35131 + 2039184 + 591576 + 14227984$$

$$\sigma^2 = 18545100$$

$$\text{Standard Deviation } (\sigma) = \sqrt{18545100} = 4306.40$$

On the basis of Standard Deviation project X should be selected as it has lesser Standard Deviation.

Coefficient of variation of two projects

$$CV_X = SD_X / EV_X = 2065.79 / 19150 = 0.1079$$

$$CV_Y = SD_Y/EV_Y = 4306.04/25430 = 0.1693$$

On the basis of Coefficient of Variation also the Project X should be selected as it is less riskier.

3.7 External Environment can affect the organization directly or indirectly (e.g., by influencing the availability, quality and affordability of a capital that the organization uses or affects). Significant factors affecting the external environment that affects the organization's ability to create value in the short, medium or long term include aspects of:

- **Legal aspects:** The legal compliances are increasing day-by-day to the businesses. Failure to adhere to the rules and regulations of various acts and rules attract penal consequences. Lawsuits against company are increasing either because of poor services are rendered or products sold.
- **Commercial aspects:** The demand of a product or service depends much on economic factors like rising interest rates, unemployment and inflation. Business opportunities may turn into negative with a negative economy, less purchasing power and savings of people and lesser credit available to customers.
- **Social:** The culture of the people, their changing lifestyles, customs and values, tastes and habits are some of the socio-cultural factors which have impact on the functioning of the business. A product or a business that is successful with people following a particular culture may not be so successful with people following a different culture.
- **Environmental:** The environment plays a vital role in running a business. For example, it may not be feasible to grow apples in cities which have not climatic conditions. The business depends upon various environmental factors such as dust and pollution level, availability of water etc. Changes to environment deeply affect not only the society but also the business as well.
- **Political context:** The government has policies towards import and export, taxation, consumer protection etc. and the economy is guided and shaped by such policies. For example, incentives are given for exports when the country is keen on increasing the exports than imports. Hence, it is very much important that the business world has a good relationship with the government which again depends on the political situation prevailing in the country.

3.8 Foreign Exchange exposure

It can be defined as a contracted, projected or contingent cash flow whose magnitude is not certain at the moment. The magnitude depends on the values of variables such as foreign exchange rate and interest rate. In other words, exposure refers to those parts of a company's business that would be affected if exchange rate changes.

Types of Exposures

In the case under consideration, SPL might face following type of exposures in its proposed transactions.

- *Transaction Exposure:* This exposure is the impact of setting outstanding obligations entered into before change in exchange rates but to be settled after the change in exchange rates.

Since, SPL is planning to export, manufactured products and importing machinery there may be impact on cash flow as the exchange rate may be changed between the period when the transaction was initiated and when transaction is settled.

- *Economic or Operating Exposure:* This exposure relates to change in economic value of firm due to change in exchange rates. This may be due to change in the demand of product due to change in exchange rates.

In the case under consideration, since SPL will also export goods, then change in exchange rates can lead to change in demand of product and hence is exposed to operating risk.

CASE STUDY - 4

INTRODUCTION

Organic Tea Limited (OTL) is a fast growing chain of tea stores that are typically located close to places like educational institutions, railway stations and bus stations across India. It has company-operated as well as licensed stores. Licensed stores generally have a lower gross margin but a higher operating margin than company-operated stores. Under the licensed model, OTL receives a reduced share of the total store revenues, but this is more than offset by the reduction in Company's share of operating costs as these are primarily incurred by the licensee.

In licensed store operations, OTL leverage the expertise of our local partners and share its operating and store development experience. Licensees provide improved access to retail space at strategic locations. Most licensees are prominent retailers with in-depth market knowledge and access. As part of these arrangements, OTL receives royalties and license fees from the licensees and it also sells certain kitchen equipment to licensees for use in their operations. Employees working in licensed retail locations follow the detailed store operating procedures and attend training classes similar to those given to employees in company-operated stores.

After the success of tea business, OTL has incorporated a wholly owned subsidiary named Organic Toys Limited. The management has an ambitious target for this business segment.

OBSERVATIONS ON BUSINESS REVIEW BY THE MANGEMENT

1. *OTL depends upon relationships with tea producers, outside trading companies and exporters for supply of quality tea. The management believes that the supply-chain management. is one of the key reasons why the Company has been able to reduce*

operating costs and improve operating margin and the risk of non-delivery on such purchase commitments is remote.

- 2. The management believes that customers choose among tea vendors primarily on the basis of product quality, service and convenience, as well as price. However there is a direct competition from large competitors in quick-service restaurant (QSR) sector with restaurants and other retailers for prime retail locations and qualified personnel to operate both new and existing stores.*
- 3. Many of information technology systems, such as those we use for our point-of-sale (POS), web and mobile platforms, including online and mobile payment systems, delivery services and rewards programs, and for administrative functions, including human resources, payroll, accounting and internal and external communications, as well as the information technology systems of licensees and other third-party business partners and service providers, whether cloud-based or hosted in proprietary servers, contain personal, financial or other information that are critical for business growth. The board is concerned about a material breach of information technology systems that result in the unauthorized access, theft, use, destruction or other compromises of customers' or employees' data or confidential information of the Company stored in such systems, including through cyber-attacks or other external or internal methods, it could result in a material loss of revenues from the potential adverse impact to reputation and brand.*
- 4. The management is aware that cyber attacks can result in enormous business losses - financial, investor confidence, and corporate image. They can also lead to serious legal issues, especially when more and more private data are being captured, stored, and transmitted across the public Internet. These losses and legal challenges can have a small, short-term impact but more often than not, they have a significant, long-term impact. According some basics of disaster recovery plan (DRP) is in place but there is no focus on business continuity plan (BCP).*
- 5. Internal auditors have identified serious lapses in information security system and procedures. Significant capital investments and other expenditures could also be required to remedy cyber security problems and prevent future breaches, including costs associated with additional security technologies, personnel, experts and credit monitoring services for those whose data has been breached.*
- 6. Earlier, risk management was being supervised by the audit committee of the board (ACB). However, considering the significant risk Company is facing with a growing business a separate risk management committee (RMC) has been created. There are few common members in the RMC and ACB. The RMC has been asked by the board to use 'scenario analysis techniques' in the key risk area to assess the potential risk. In fact one of the board members remarked that "scenario analysis was more about potential response and mitigation than exact probability".*

FURTHER DEVELOPMENTS

1. OTL has been banking with PQX Bank for last five years and has become an important client of the bank. The Company has been borrowing heavily in order to finance its growth. The track record of servicing debt is very good. In addition to the interest income, the Company provide a significant amount of fee income. The following financial summary has been presented to the bank:-

	INR
Total sales	140,00,000
Total assets	35,00,000
EBIT	4,00,000
Debt as a percentage of total assets	70%
Capital turnover	10 times
Inventory days	30
Receivable days	1
Payable days	13
Annual sales growth (average, last three years)	120%
Dividend pay-out ratio	20%

2. The management of the Company believes that next year sales will grow by 100%. Currently the company is using its cash credit limit of INR 5,00,000 and expecting an increase in the cash credit limits. Term lending is no longer an option, as the Company has reached the bank's limit of total gearing.
3. The Company has a small treasury and it has made investment in 1 S listed equity shares and few mutual funds. The performance of the portfolio is monitored on a regular basis and the Company has implemented VaR (Value at Risk) techniques in the portfolio management.
4. PQX Bank has refused to support working capital facility for Organic Toys Limited as the performance of the company is not good. The management, however, is still going ahead with expansion by investing own fund mainly using 'over-trading'.

Multiple Choice Questions

Choose the most appropriate answer from the answer options:

- (4.1) If the working of the company is showing indicators such as (i) reliance on long term debts; (ii) offering longer credit period, (iii) higher level of inventory, (iv) rapid decreasing sales and (v) deteriorating current ratio, which of these indicators are reflections of 'overtrading' in the context of working capital management?

- (A) (i), (iii) and (iv) only.
- (B) (ii), (iii) and (v) only.
- (C) (i), (ii) and (iii) only.
- (D) (ii) and (v) only.

(4.2) Which one of the following is incorrect with respect to risk mitigation process?

- (A) Recovery requirements are developed after the risk assessment phase and include data from the business impact analysis.
- (B) Recovery options must fit within the constraints of the recovery requirement.
- (C) Existing controls and risk mitigation solutions already in place should be reviewed after requirements and options are reviewed.
- (D) Determining the cost, capability, effort to implement, quality, control, safety, and security of each option under consideration.

(4.3) Which one of the following is not correct with respect to DRP/BCP?

- (A) Performing backups of critical data on servers, in and of itself, is a good start but does not constitute a disaster recovery plan.
- (B) BCP is subset of DRP.
- (C) BCP/DRP can provide an opportunity for a company to evaluate and improve its business processes.
- (D) When developing a BCP/DRP you need to look at the three core components of business: people, process, and technology.

(4.4) Which one of the following is not correct with respect to VaR ?

- (A) VaR is solely a measure of downside risk.
- (B) In delta-normal method of VaR calculation assets assumed to be normal.
- (C) If there is sudden spike in volatility, the historical simulation VaR will overstate actual risk.
- (D) Simulation VaR handles non-normality.

(4.5) The CFO of the Company is in the process of evaluating performance of investment in equity. In this context, he wants to understand how R-squared is related with the risk. In your opinion, the ratio of diversifiable risk to total risk of a security should be called as

- (A) R-squared.
- (B) 1 minus R-squared.
- (C) Beta.

(D) Sharpe Ratio.

(2 x 5 = 10 Marks)

Descriptive Questions

- (4.6) How much increase in the cash credit is required in order to fund increased working capital requirements of OTL ? Give reply through stepwise calculation. **(3 Marks)**
- (4.7) It is common to have overlap between ACB and RMC in terms of common members in a company like OTL but the overlap in terms of roles should be avoided. What would be your suggestions about the roles of members of RMC and ACB so that there is no overlap in terms of their roles? **(3 Marks)**
- (4.8) Would you agree that "scenario analysis is more about potential response and mitigation than exact probability"? Support your views by giving reasons. **(3 Marks)**
- (4.9) Based on the information given in this case study, what would be your suggestions in a sequential manner to manage operational risks to the expectations of the board? **(6 Marks)**

Answer

Multiple Choice Questions

- 4.1 (B)
 4.2 (A)
 4.3 (B)
 4.4 (C)
 4.5 (B)

Descriptive Questions

- 4.6 To calculate the increase in Cash Credit we shall compute the value of each constituent of Working Capital as follows:

$$\text{COGS} = ₹ 2,80,00,000 - ₹ 8,00,000 = ₹ 2,72,00,000$$

Computation of Working Capital

Inventory	= (COGS x 30/365)	= (2,72,00,000 x 30/365)	₹ 22,35,616
Receivable	= (Sales x 1/365)	= (2,80,00,000 x 1/365)	<u>₹ 76,712</u>
			₹ 23,12,328
Less: Creditors	(COGS x 13/365)	= (2,72,00,000 x 13/365)	<u>₹ 9,68,767</u>
Net Working Capital Requirement			<u>₹ 13,43,561</u>

Increase in Cash Credit Limit required	
Working Capital Requirement	₹ 13,43,561
Less: Existing Cash Credit Limit	<u>₹ 5,00,000</u>
	<u>₹ 8,43,561</u>

Alternatively, if 360 days a year are assumed then solution will be as follows:

COGS = ₹ 2,80,00,000 – ₹ 8,00,000 = ₹ 2,72,00,000

Computation of Working Capital

Inventory	= (COGS x 30/360)	= (2,72,00,000 x 30/360)	₹ 22,66,667
Receivable	= (Sales x 1/360)	= (2,80,00,000 x 1/360)	<u>₹ 77,778</u>
			₹ 23,44,445
Less: Creditors	(COGS x 13/360)	= (2,72,00,000 x 13/360)	<u>₹ 9,82,222</u>
Working Capital Requirement			<u>₹ 13,62,223</u>

Increase in Cash Credit Limit required	
Working Capital Requirement	₹ 13,62,223
Less: Existing Cash Credit Limit	<u>₹ 5,00,000</u>
	<u>₹ 8,62,223</u>

Alternative Solution

- Step 1** Cash Conversion Period = Inventory days + Receivable days – Payable days
i.e. 30 + 1 - 13 = 18 days.
- Step 2** Net working capital to sales ratio = 18/365 = 0.049 (rounded off)
- Step 3** The next year additional sales are expected to be ₹ 1,40,00,000. So the total expected sales would be ₹ 2,80,00,000.
- Step 4** Taking net working capital to sales ratio computed in step 2 and applying the same to total expected sales calculated at Step 3, the company will need ₹ 13,72,000 towards working capital.
- Step 5** At present the company is enjoying cash credit limit of INR 5,00,000, the additional working capital requirement shall be ₹ 8,72,000 (₹ 13,72,000 – ₹ 5,00,000).

- 4.7** The role of RMC is to lay down risk management policies, procedures and limits while the role of an ACB is to review their implementation and effectiveness. In this context it is important to note that the ACB should remain at its supervisory role and that can be

achieved by risk based supervision and they should not act like line function. Simply stated the responsibility is to identify weak areas and follow it up with the RMC. The ACB also need to find out if the company has documented identified risk and the related policies and how it is implemented at ground level.

Alternative Solution

So that there should be no overlap between the roles of members of Risk Management Committee (RMC) and Audit Committee of the Board (ACB) it is very important that their roles are clearly defined which are as follows:

Role of RMC

- (a) is required to be a stand-alone committee, distinct from the audit committee;
- (b) has a chair who is an independent director and avoids “dual-hatting” with the chair of the board, or any other committee;
- (c) includes members who are independent;
- (d) includes members who have experience with regard to risk management issues and practices;
- (e) discusses all risk strategies on both an aggregated basis and by type of risk;
- (f) is required to review and approve the firm’s risk policies at least annually;
- (g) oversees that management has in place processes to ensure the firm’s adherence to the approved risk policies.

Alternative Solution for above portion – Role of RMC

1. To assess the company’s risk profile, risk appetite and key areas of risk in particular.
2. To recommend to the board and adoption of risk assessment and rating procedures.
3. To articulate the company’s policy for the oversight and management of business risks.
4. To examine and determine the sufficiency of company’s internal processes for reporting and managing key risk areas.
5. To assess and recommend board acceptable levels of risk.
6. To facilitate development and implementation of a risk management framework and internal control system.
7. To review the nature and level of insurance coverage.
8. To have special investigation into the area of corporate risk and break downs in internal control.
9. To review management response to the company auditor’s recommendations.

10. To report the trends on the company's risk profile, reports on specific risk and the status of risk management process.

Role of ACB

- (a) is required to be a stand-alone committee, distinct from the risk committee;
 - (b) has a chair who is an independent director and avoids "dual-hatting" with the chair of the board, or any other committee;
 - (c) includes members who are independent;
 - (d) includes members who have experience with regard to audit practices and financial literacy at a financial institution;
 - (e) reviews the audits of internal controls over the risk governance framework established by management to confirm that they operate as intended;
 - (f) reviews the third party opinion of the design and effectiveness of the overall risk governance framework on an annual basis.
- 4.8** The given statement is correct to some extent because grouping scenarios per types of consequences for organisation help to focus on impact assessment and mitigation action because ultimate objective of scenario analysis is risk mitigation.

Further, if scenario analysis reveals the breaches in control or risk level beyond the risk appetite then scenario analysis to plan for further mitigation.

In case results of scenarios analysis are within range of appetite, then no further action is required. In case of scenario seems unlikely firm must plan reaction and mitigation accordingly.

- 4.9** Three lines of defence model can be used by any industry with some customisation on basis of the organisational structure, the complexity of the business processes and evolving capability of the control awareness.

- (1) The **First line of defence** is the function/department/role that owns the process. They are supposed to have sufficient governance on the operational risks pertaining to their areas of responsibility, such as
 - Set up required policies govern the area of work,
 - Establish process notes, control-steps in the process notes, and methods to measure the efficacy of the controls,
 - Perform the self-assessments and monitoring of risk indicators, etc.
 - Examples are, in a financial organisation, the Operations department often has a detailed set of process notes that assign control steps to designated individuals, and also a method of measuring / tracking if the controls were exercised properly.

These tracking / measuring tools could be at varying frequency, being built into a formal RCSA (Risk Control Self-Assessment) where risks and control efficiency are highlighted. This line functions closely with the Second line in a collaborative method which could be formalised in any governance process established by the ORM Committee.

- (2) The **Second line of defence** is the Operational Risk department, which while being part of the management framework, sets up, oversees the operational risk management of the first line of defence. The typical roles played by the second line of defence are:
- Working with the process owners (first line of defence) to set up the risk and control matrix.
 - Advise / recommend the method and frequency of testing of controls to the first line of defence, thereby setting up a self-assessment process based on the RCM.
 - Perform risk assessment of new products, services and processes, especially in instances where new technology is being deployed.
 - Review and publish results of the RCSAs and risk assessments, and any exception reports / Key risk indicators set up in the framework.
 - Convene, and report to the ORMC, and report to the Board / Risk Committee of the Board as well with the necessary updates.
- (3) The **Third line of defence** is Internal Audit; it is independent of management control and reports to the Audit Committee of the Board.
- An effective internal audit would highlight issues and potential gaps in processes, which were missed by the first two lines of defence as well. As an independent vertical, their value addition provides a better insight into the process from a holistic perspective since they are not directly involved in managing the process.
 - Checking on efficacy of controls that mitigate operational risk, is a key deliverable of Internal Audit.
 - Over last few decades, internal audit has evolved into a concept of Risk Based Auditing. The term itself refers to an approach where the audit function identified risks and controls in a very similar fashion as the operational risk methodology, and then choose to focus their attention and deploy resources on checking the areas of choice.

Alternative Solution

Based on the information given in the case study under consideration to manage the risks to the expectations of the Board following are some suggestions:

- The **First line of defence** is the function/department/role that owns the process. They are supposed to have sufficient governance on the operational risks pertaining to their areas of responsibility.
- The **Second line of defence** is the Operational Risk department, which while being part of the management framework, sets up, oversees the operational risk management of the first line of defence.
- The **Third line of defence** is Internal Audit; it is independent of management control and reports to the Audit Committee of the Board.
- Identification of risk areas: whether it is own or outsourced network, internet, individual computers, mobile devices etc. Prioritization of resources and effort can be managed accordingly.
- Adequately restricting access to systems is the common way to prevent cyber risk; this is done by password protection at various levels, from common user to administrator level.
- Encryption solutions on individual computers is also done in a manner that if lost, the unauthorised entity cannot download the data into an external storage device.
- There are several technology solutions that create an adequate firewall of the organisation's systems to protect them from hacking from outside.
- A regular vulnerability testing of the firewall and periodic review to upgrade it is one of the main tasks of the information security manager. Detection of a test-attack is very important part of the preventive mechanism; an attacker may attempt to cause a minor violation to test the organisation's network security before causing a major incident.
- A response strategy to a cyber-attack incident is also important as part of risk management. The measures to prevent or mitigate customer disputes, legal indemnities, assess and minimize the financial impact of a cyber-attack, and governance over decision making and investments to restore the system functionalities to its secure state, are all important considerations. The root cause of these incidents and the impact have to be adequately documented.

CASE STUDY – 5**INTRODUCTION**

Ms. Jamuna is having 10000 sq. feet of vacant land, situated in the heart of Chennai city. She inherited the above vacant land. She also holds fixed deposits of ₹ 4 crores in a nationalised bank.

THE PROJECT

She wanted to construct twelve apartments in the vacant land, keeping one apartment as her own residence. She is mulling over two options; to let out on rent the eleven apartments for offices or let out the apartments as "service apartments". There is a famous marriage hall nearby the vacant land. She expects that there will be demand for the service apartments during marriage seasons and other functions held in the marriage hall and also, she feels that there will not be many hassles in the same in (i) collecting rent and (ii) constant attention to the maintenance of the apartments.

PROJECT FUNDING

She needs a total amount of ₹ 4.70 crores to construct the apartments. She can utilise the bank fixed deposits towards construction. For the balance of the amount, she requested her cousin Mr. Deepak, who is residing in USA, to send a loan which would be repaid to him after 5 years. She agreed to pay an interest of ₹ 5 lakhs per annum and the same would be paid to his bank account maintained in India. Mr. Deepak agreed to send her the amount in US dollars, once she completes the spending from the closure of fixed deposits.

A month after giving his acceptance, Mr. Deepak told her that as he is tied up urgently with a financial commitment, he would be requesting his friend Mr. Tony who is a resident of Nigeria to send Ms. Jamuna 1 lakh US dollars through banking channel. She has to pay an interest amount every year @ 6% and the repayment of the loan to Mr. De Martin, Mumbai at the end of five years.

As an alternate to obtaining loan from Mr. Tony, Ms. Jamuna considers the possibility of obtaining a bank loan. The bank would charge her 9% and she proposes to request the bank to reduce it to 8%.

REVENUE ESTIMATES

The probability is estimated at 70% occupancy, if let out as apartments and 60% occupancy, if let out as service apartments. It was expected by Ms. Jamuna that in a worst-case scenario, she may incur a loss of ₹ 12 lakhs and ₹ 10 lakhs in case of letting out as individual apartments and service apartments respectively.

CONSTRUCTION RELATED ISSUES

For the construction, she approached a qualified engineer-cum-builder and requested him to provide detailed plans, procedures for getting necessary approval from the concerned Governmental departments, estimates, stages of project, quality and specification of materials

to be used throughout the construction, details of the supervisors and break-down of payments to be made by her at various stages. She wanted to have a comprehensive construction agreement embedding all the details, especially the escalation clause (refers to the provision in the contract to increase the agreed rates, if the inputs for construction increased beyond a certain level).

She requested the engineer to periodically appraise her of the situation by holding meetings at the end of each major activity of the project. She also insisted that the supervisors employed by the engineer have to report to her about the risky situations and hazards in the construction site regularly so that precautionary steps could be taken to ensure the safety of the workers. However, she is sceptical about the skill sets of the workers, as finding and employing skilled workers has become a tough job.

MAINTENANCE OF RECORDS

Ms. Jamuna is very keen in maintaining meticulous records of the construction. She would also like to maintain a dairy of events (akin to a risk register), noting down all the events, problems faced and their corresponding solutions. But she is not fully aware of the risks and vulnerabilities that she would face during the construction.

She has read somewhere that control risks are often associated with project management. In these circumstances, it is known that the events will occur, but the precise consequences of those events are difficult to predict and control. Therefore, the approach would have to be based on minimizing the potential consequences of these events. Hence, she wanted to have a list of specific risks to the project, sorted on their relative importance, and consequences.

Multiple Choice Questions

Choose the most appropriate answer from the given options.

(5.1) A risk may still occur that the apartments may lie vacant or there would be no occupancy of service apartments, even when there is no significant change in the economy of the country. This risk may be classified as

- (A) Static Risks
- (B) Country Risks
- (C) General Risks
- (D) Opportunity Risks

(5.2) Which of the following risk identification techniques that the supervisors would most likely use for reporting to Ms. Jamuna on the risky situations and hazards in the construction site?

- (A) Surveys
- (B) Direct Observations

- (C) Incident Analysis
- (D) Scenario Analysis

(5.3) If in the near future, the nearby marriage hall is converted to a shopping mall, Ms. Jamuna most likely would face which of the following risks in case she has decided to let the building as service apartments?

- (A) Credit Risk
- (B) Economic Risk
- (C) Controllable Risk
- (D) Market Risk

(5.4) Which of the following techniques for measurement of interest rate risk, the bank would not consider, if Ms. Jamuna submits a proposal for a bank loan asking the bankers to determine the rate of interest ?

- (A) Value at Risk
- (B) Simulations
- (C) Monotonicity
- (D) Maturity Gap Analysis

(5.5) Which of the following would least likely be included in the diary of events maintained by Ms. Jamuna ?

- (A) Identify the Risk
- (B) Analyse the Risk
- (C) Evaluate or Rank the Risk
- (D) Treat the Risk

(2 x 5 = 10 Marks)

Descriptive Questions

(5.6) Discuss the factors that would create vulnerabilities and associated risks in the construction of the apartments by Ms. Jamuna, by drawing references from the case study.

(6 Marks)

(5.7) Discuss the risk and uncertainty in letting out the building by Ms. Jamuna either as individual apartments or service apartments.

(5 Marks)

(5.8) Explain how Ms. Jamuna's bank would view the receipt of money from Mr. Tony and what measures that the bank would employ to check the veracity of the transaction and compliance with applicable laws for foreign loans?

(4 Marks)

Answer**Multiple Choice Questions**

5.1 (A)

5.2 (B) or (C)

5.3 (B) or (D)

5.4 (C)

5.5 (D)

Descriptive Questions

5.6 The various factors that can create vulnerabilities and associated risks in the construction of apartments by Ms. Jamuna are as follows:

- (a) *Fluctuation of raw material prices:* There is always a possibility that the prices of raw materials may increase. Even though, Ms. Jamuna has to pay only a fixed amount, if the prices increase beyond the specified percentage, then she has to pay more as per the terms of escalation clause in the agreement with the engineer/builder.
- (b) *Scarcity/quality of materials:* Under the proposed contract, the material to be used should have a high-quality throughout the entire construction. It may so happen that such material may not be available after a certain stage of the project. The engineer might use an inferior material, or the construction activity might have to be stopped till the right material is procured.
- (c) *Shortage of skilled workers:* Finding out the right man for the right job is becoming difficult. It is not always possible to employ skilled workers as they are very scarce and also costly to employ. Ms. Jamuna has to choose the engineer/builder with utmost care, based on the past records which would show that he has not faced shortage of requisite skilled workers in the past.
- (d) *Unpredicted weather conditions:* Unfavorable or unpredicted weather conditions may also delay the project. For example, heavy rains during summer months would delay laying of ceiling concrete. Adequate cushion in the project completion time should be taken care of.
- (e) *Changes in laws and regulations:* The government may change rules/policy in the matter of construction industry, including the ongoing constructions in the state. This may also affect the construction. There might be periodic inspections from the authorities to ensure that the building construction does not violate the norms.
- (f) *Safety of workers:* Safety of workers is always to be ensured. Safety measures such as wearing protective helmets, boots, gloves, masks and eye-wear glasses are some of the examples. In the construction agreement, it must be clearly stated that the engineer/builder is solely responsible for the safety of the workers.

- (g) *Environmental pollution:* Dust and pollution not only affect the workers but also the neighbours as well. There might be complaints from the neighbours about the noise, dust, smoke, etc. Hence sufficient anti-dust and pollution measures are to be taken, such as, periodic sprinkling of water, avoid using harmful chemicals, controlling the emission from diesel engines used in the construction sites etc. It is to be made clear in the agreement that the engineer/builder is responsible for the risk.

Alternative Solution

The factors that can create vulnerabilities and associated risks in the construction of apartments are as follows:

- (i) Since in India marriages are normally season based hence property may remain vacant for some time.
- (ii) Increase in cost of raw material beyond certain level.
- (iii) Health and safety of workers at site.
- (iv) Shortage of skilled workers.
- (v) In case if loan is taken in US \$, then foreign exchange rate risk for payment of interest and repayment of loan.
- (vi) The payment of interest and repayment of loan to DeMartin of Mumbai would result in money laundering activity.

5.7 1. Uncertainty: The lack of complete certainty, that is, the existence of more than one possibility. The “true” outcome/state/result/value is not known. In this case, Ms. Jamuna is facing uncertainty whether to let out the building as individual apartments or as service apartments.

2. Measurement of uncertainty: A set of probabilities assigned to a set of possibilities. There is a 70% probability that the apartments will be occupied, if it is let out as individual apartments and 60% occupancy, if let out as service apartments.

3. Risk: A state of uncertainty where some of the possibilities involve a loss, catastrophe, or other undesirable outcomes.

Ms. Jamuna might face loss in either of the possibilities.

4. Measurement of risk: A set of possibilities each with quantified probabilities and quantified losses.

In a worst-case scenario, she may incur a loss of ₹12 lakhs and ₹10 lakhs in case of letting out as individual apartments and service apartments respectively.

5. Chief difference between uncertainty and risk

In this sense, one may have uncertainty without risk but not risk without uncertainty. The measure of uncertainty refers only to the probabilities assigned to outcomes,

while the measure of risk requires both probabilities or outcomes and losses quantified for outcomes.

Ms. Jamuna cannot take an insurance policy for the uncertainty in choosing the alternatives, while insurance can be had for perils such as fire, flood, earthquake, etc. Another point of difference is that uncertainty cannot be transferred, while the risk can be transferred to an insurance company.

- 5.8** The amount of US \$ 1 Lakh received by Ms. Jamuna from Mr. Tony may be subject to scrutiny by the bank under Prevention of Money Laundering Act, 2002.

The bank would like to ensure that such amount received by Ms. Jamuna is not out of any illicit activities/transactions. The bank would go into the nature of receipt of the money, i.e., whether it is a loan or a gift of money, terms and conditions of the receipt and also the details of how the interest and loan is proposed to be repaid. Bank would analyse whether any provisions of Foreign Exchange Management Act (FEMA) is violated.

Big data analytics can improve the existing process in Anti-Money Laundering (AML) operations. Its approaches allow for the advanced statistical analysis of structured data, and advanced visualisation and statistical text mining of unstructured data. These approaches can provide a means to quickly draw out hidden links between transactions and accounts and uncover suspicious transaction patterns. Advanced analytics can generate real-time actionable insights, stopping potential money laundering in its tracks, whilst still allowing fund transfers for crucial economic and human aid to troubled regions. Big data technologies can identify incidents, help draw a wider picture, and allow a bank to raise the alarm before it's too late.