DISCLAIMER

This Suggested Answer hosted on the website do not constitute the basis for evaluation of the student's answers in the examination. The answers are prepared by the Faculty of the Board of Studies with a view to assist the students in their education. Alternate Answers have been incorporated, wherever necessary. While due care is taken in preparation of the answers, if any error or omission is noticed, the same may be brought to the attention of the Director of Board of Studies. The Council of the Institute is not in anyway responsible for the correctness or otherwise of the answers published herein.

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.

Answer in respect of Multiple-Choice Questions (MCQs) are to be marked on the OMR Answer Sheet as given on the Cover Page of the answer book.

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

Candidates should answer the Case Study Questions as selected by them in totality i.e. MCQ as well as descriptive Question of the same Case Study Question.

Candidates are not permitted to answer MCQs of one Case Study Question and the descriptive questions of another Case Study Question and vice-versa.

Candidates may use calculator.

CASE STUDY 1

Chand Lighting Limited (CLL), A public limited company, is manufacturing and supplying filaments, elements, circuit boards and other accessories for electric and CFL bulbs manufacturers throughout the country since the year 2002. The turnover for the year ended 31st March 2019 was ₹ 100 crores. The demands of the customers are moving more towards LED lightings. Having this in mind, Mr. Suraj, the Managing Director (MD) wants to diversify the product range presently manufactured by CLL. To explore the possibility of the same, a consultant Mr. Aditya Balram (ABR) was engaged.

ABR after marking his initial study, came out with the following observations:

- *CLL can become lighting solutions provider, instead of accessories provider to other manufactures.*
- *ABR projected that the turnover could be increased to ₹ 200 crores in the next five years.*
- *The management as well as the staff should stay motivated to achieve the targets.*
- *Necessary permissions to be obtained from the appropriate authorities.*
- *CLL might require a term loan of ₹ 10 crores and additional working capital limits of ₹ 2 crores, towards the proposed expansion.*
- *The bank would undertake the Credit Risk Rating (CRR) process in the proposed loan to CLL by measuring the internal rating assigned to CLL and assessing the likelihood that CLL would default on its debt obligations.*
- *The LED bulbs could be exported to the neighbouring countries, and export sale proceeds can be received through USD instead of the currencies of respective countries.*
- *ABR explained to the management, the concept of forward contracts and money market hedging to save CLL from currency rate fluctuations.*

- *He cautioned CLL that some neighbouring countries might suddenly increase the tax rates without any anticipations and CLL could be caught unawares.*
- *CLL can open a separate web-portal for making online sales.*
- *He suggested (i) to strengthen the risk management processes with specific reference to various functional areas of operations (ii) to effectively engage in the process of assessing risks and (iii) prescribe policies and procedures to minimize loss associated with such risks.*
- *ABR also suggested to CLL to have a strong internal control (IC) system for the various activities carried out, as the core objective of internal controls is to reduce the inherent risk and keep the residual risk within the organization's risk appetite.*
- *To periodically review the bottlenecks identified int the various production and distribution processes and Enterprise Risk Management (ERM) approach must be embraced as this would assist in the evaluation and bridging of the gap between uncertainty and performance in CLL.*
- *To have a strong Business Continuity Plan (BCP) drawn that would include tasks like establishing continuity strategies, planning for continuity of critical operations, continuity management etc. For this purpose, a formal Decision-Making Committee (DMC) is to be formed by the management to oversee the entire chain of activities involved in BCP.*
- *ABR suggested that CLL has options to be solution providers of variety of CFL products such as tube lights, candle bulbs, strip lights and spot lights. ABR came out with the following projections:*

Sales /Products ₹ (in Crores)	***Year 1***	***Year 2***	***Year 3***	***Year 4***	***Year 5****
LED Tube Lights	*37*	*39*	*41*	*45*	*48*
LED Candle Bulbs	*36*	*37*	*39*	*43*	*47*
LED Strip lights	*43*	*45*	*47*	*51*	*57*
LED Spot lights	*36*	*37*	*40*	*43*	*48*
Total Sales	***152***	***158***	***167***	***182***	***200***

** In question paper it was mistakenly was printed as 4.*

After further analysis, ABR had weighed two options as below:

Manufacturing Options	***Net Revenue***	***Risk-weighted assets***
LED Spot Lights	*₹ 42 lakhs*	*₹ 1.5 Crores*
LED Strip Lights	*₹ 62 lakhs*	*₹ 2.1 Crores*

Based on his calculations, ABR suggested to go ahead with the production of LED strip lights.

The management has requested you to answer the following:

Multiple Choice Questions

Choose the most appropriate answer from the answer options. (2 x 5 = 10 Marks)

1.1 The CRR process proposed to be employed by the bank would be:

(A) Borrower of Default

(B) Probability of Default

(C) Credit Rating Default

(D) Exposure at Default

1.2 The caution given by ABR would MOST likely fall under:

(A) Sovereign Risk.

(B) Expropriation Risk.

(C) Exchange Control Risk.

(D) Taxes, Rule and Regulation Risk.

1.3 What would be the % of increase / decrease over the projected total sales for year 5, if there is (i) an increase in sales figures of LED Strip lights by 12 % and (ii) a decrease in sales figures of LED Spot lights by 10% for that year?

(A) Increase of 1.02%

(B) Increase of 3.42%

(C) Decrease by 2.40%

(D) Decrease by 1.01%

1.4 The foreign buyer to whom the exports were made may intend to pay through dollars. If the Spot rate between INR and USD is ₹ 74 to a dollar and the three months forward rate is ₹ 75 to a dollar, what is the forward premium percentage?

(A) 4.05%

(B) 5.33%

(C) 5.41%

(D) 16.22%

1.5 The gap between the inherent risk and residual risk shows the strength of the control and is known as the:

(A) Risk Score.

(B) Vantage Score.

(C) Control Score.

(D) Risk weighted Score.

Descriptive Questions

1.6 What is an Enterprise Risk? List the items that the ERM process would comprise of with reference to CLL. ***(4 Marks)***

1.7 Do you agree with ABR's suggestion for producing LED Strip Lights? Give answer with reasons. Would your answer be different if the net revenue from LED Strip Lights is ₹ 60 lakhs? Show your workings. ***(6 Marks)***

1.8 Explain the advantages and disadvantages of entering into a contract to exchange a certain amount of one currency for a fixed amount of another currency, at a particular date.

(3 Marks)

1.9 What are the chain of activities that would be overseen by DMC? ***(2 Marks)***

Answer

Multiple Choice Questions

1.1 (B)

1.2 (D)

1.3 (A)

1.4 (C)

1.5 (C)

Descriptive Questions

1.6 Enterprise Risk includes all types of major risks encountered by any organisation irrespective of its size. Enterprise risks typically included all types of major risks such as strategic risk, operational risk, financial risk, pure risk, speculative risk etc.

The ERM process consists of Risk identification, prioritization and reporting, Risk Mitigation, Risk Monitoring and assurance.

1.7 Technique of Return on Risk Adjusted Capital (RORAC) is used to take decision by the consultant.

RORAC = Net income/ Allocated Risk Capital

	LED Spot Light	**LED Strip Light**
Net Revenue	₹ 42,00,000	₹ 62,00,000
Risk-weighted assets relating the project	₹ 1,50,00,000	₹ 2,10,00,000
Net income/ Allocated Risk Capital	= 42 / 150	= 62 / 210
RORAC	28.00%	29.52%

LED Strip Light was thus correctly suggested by the consultant as it is having a better RORAC.

II Alternative – Net Income from LED Strip Light is ₹ 60,00,000

	LED Spot Light	LED Strip Light
Net Revenue	₹ 42,00,000	₹ 60,00,000
Risk-weighted assets relating the project	₹ 1,50,00,000	₹ 2,10,00,000
Net income/ Allocated Risk Capital	= 42 / 150	= 60 / 210
RORAC	28.00%	28.57%

Even if the Net Revenue is ₹ 60 lakhs, production of LED Strip Light is suggested, as the RORAC is better.

1.8 Advantages

(a) Fixes the future rate, thus eliminating downside risk exposure.

(b) Flexibility with regard to the amount to be covered.

(c) Money market hedges may be feasible as a way of hedging for currencies where forward contracts are not available.

Disadvantages include:

(a) More complicated to organise than a forward contract.

(b) Fixes the future rate - no opportunity to benefit from favourable movements in exchange rates.

1.9 The decision-making committee (DMC) would oversee

(i) Formation of BCP policy, (ii) Business Impact Analysis, (iii) Functional Recovery Plan and (iv) to review Test results.

CASE STUDY: 2

About the Company

Best Kitchen Private Limited (BKPL) is a specialist company in setting-up modular kitchen for homes. It was incorporated in the year 2014.

Products of BKPL

A typical modular kitchen comprises of compartments of cabinets, shelves, drawers, sink, chimneys, and racks fitted in a kitchen. Such components are modular in nature and can easily be dismantled, reassembled, or replaced. Working convenience, strategically storing the products used in the kitchen, aesthetic look and ease of maintenance are some of the features that make the concept of modular kitchens so popular.

BKPL offers several types of modular kitchen catering to the dynamic needs of the customers. BKPL is famous for its innovative and modern designs and styles which are made-to-order *according to the specifications of each customer. The demand for installation is growing up and BKPL is not able to cope up with the increasing demand.*

BKPL is also getting the orders through its website.

Purchase of raw materials and handling scraps:

a. *Some of the parts used in the modular kitchen are being imported and the management knows that there are foreign exchange exposures in such transactions. The manager of the Purchase Department, Mr. Krish, is given the task of finding out the quality alternatives from the local market keeping in mind the supportive schemes of the Government.*

b. *The left-over materials, such as, pieces of granite, aluminum, and plywood materials, are stored separately in assembly room. Mr. Girish, manager of the Marketing Department, has been telling the management that there is a market of such left-over of materials.*

Expansion proposal:

Since there is a constant increase in demand for BKPL's products and to cope-up with the changes happening in this type of industry, the management seriously exploring of expanding its business operations, by (i) modernising as well as increasing the productions capacity, (ii) opening branches in more cities and (iii) employing more qualified personnel.

However, the management was not sure whether the market would remain buoyant always. Some volatile situations such as increase in prices or ban on import of some raw materials may occur which could affect the entire plans and workings, and the competitors may offer more product ranges with lesser price. Besides the above, BKPL may be subjected to more rules and regulations to adhere to in the proposed expansion.

***Bank loan proposal**:*

For the expansion proposal, BKPL is contemplating to borrow an amount of ₹ 5 crores for a period of 4 months in the coming 6 months' time from now. The current rate of interest is 8 % p.a., but it may go up in 6 months' time. BKPL wants to hedge itself against the likely increase in interest rate. BKPL's bankers quoted a Forward Rate Agreement (FRA) at 8.3%.

Mr. Surya, the Chief Financial Officer (CFO), intends to suggest to the bankers to benchmark (i) BKPL's assets to fixed rate of interest and (ii) its liabilities to floating rate of interest

Risk Management program:

Due to the proposal for expansions of the business operations, the management wanted to implement a suitable risk management system. Such a risk management system should look at the big picture and identify not only short-term risk factors but also long-term factors impacting the entire value chain of business activities and connected communities.

It was noticed by the management that Mr. Kirsh, instructed his department employees not to share information relating to the risks identified or encountered by his department with the employees of the marketing department. The MD decided to ensure the effectiveness of the *internal controls used in BKPL and for this purpose he employed the services of an internal auditor.*

Investment activities:

BKPL has invested in hedge funds of two companies, viz., R Company Ltd. (RCL) and S Company Ltd. (SCL) respectively. There is a i) 70% probability that RCL would give a positive return and ii) 60% probability that SCL would give a positive return.

The MD wanted to invest more in this section, but the management lacks in the understanding of the nuances of the shares and funds market.

The management has requested you to answer to the following questions:

Multiple Choice Questions

Choose the most appropriate answer from the given options. (2 x 5 = 10 Marks)

2.1 The instructions of Mr. Krish would fall under which of the following Risk Maturity levels:

(A) Risk Naïve.

(B) Risk Aware.

(C) Risk Defined.

(D) Risk Managed.

2.2 Which of the following statements is not true about internal controls (IC)?

(A) IC focuses of identification of threats and opportunities.

(B) IC is sub-set of risk management.

(C) IC is operational and transactional driven.

(D) IC assists in countering threats and taking advantage of opportunities.

2.3 The foreign exchange exposure would least likely be classified under which of the following broad categories?

(A) Translation Exposure.

(B) Transaction Exposure.

(C) Country Specific Exposure.

(D) Operating Exposure.

2.4 What is probability that the hedge funds invested in RCL and SCL both would give a negative return?

(A) 42%

(B) 28%

(C) 18%

(D) 12%

2.5 The suggestion intended to be made by Mr. Surya to the bankers is best known as:

(A) Embedded Option Risk.

(B) Basis Risk

(C) Price Risk.

(D) Position Risk.

Descriptive Questions

2.6 A holistic understanding is essential about risks and uncertainties. In this context, describe VUCA with characteristics and approaches with examples drawn from the Case Study.

(6 Marks)

2.7 What are the business opportunities presented to BKPL by the external and internal environments which should find place in Risk and Opportunities Disclosures in the annual report of BKPL? ***(5 Marks)***

2.8 With regard to the proposed bank loan contemplated by BKPL, what will be the final settlement amount if the actual rate of interest after 6 months happens to be (i) 8.5% p.a. and (ii) 7.5% p.a.≈?

(Note to candidates: Calculations to be based on completed months, instead of number of days.) ***(4 Marks)***

≈ In question paper it was mistakenly printed as 7:5% p.a.

Answer

Multiple Choice Questions

2.1 (B)

2.2 (A)

2.3 (C)

2.4 (D)

2.5 (B)

Descriptive Questions

2.6 If terms are interchanged the acronym becomes VUCA which is used to describe or reflect on the volatility, uncertainty, complexity and ambiguity of general conditions and situations:

1. Complexity

Characteristics: The situation has many interconnected parts and variables. Some information is available or can be predicted, but the volume or nature of it can be overwhelming to process.

Example: Expansion of the project might involve adherence to new set of rules and regulations which is beyond the control of the organization and thus these cannot be exactly predicted.

Approach: BKPL must be proactively aware of the rules and regulations of Government and adhere to the same as well.

2. ***Volatility***

Characteristics: The challenge is unexpected or unstable and may be of unknown duration, but it's not necessarily hard to understand; knowledge about it is often available.

Example: It refers to changes that may turn adverse for BKPL. There might be unexpected events happening such as the prices of raw material increasing restrictions on import or shortage of skilled workers.

Approach: To have enough raw materials, seek alternates for sourcing the raw materials and give trailing to workers to improve their skill sets.

3. ***Ambiguity***

Characteristics: Casual relationships are completely unclear. No precedents exist; you face "unknown unknowns."

Example: BKPL does not have expertise in share market. The MD wanted to invest more in this section. This could cause Financial Risks to BKPL.

Approach: Before investing more in the shares market, careful study has to be done.

4. ***Uncertainty***

Characteristics: Despite a lack of other information, the event's basic cause and effect are known. Change is possible but not a given.

Example: The future always contains surprises. The market may not remain buoyant always. The competitors might erode the market share of BKPL by quoting lesser prices and by offering more product ranges.

Approach: To study the market condition, collect information of the competitors, and analyse this information and wherever possible, changes are to be made to the existing processes and removing bottlenecks in the process. These steps would in a way, address the question of uncertainty.

2.7 Business Opportunities presented to BKPL by the external and internal environments.

- BKPL can capitalize on the growth in demand of the products, with so many apartments coming up and the needs and preferences of the customers opting for having modular kitchen in their homes. They can also explore offering readymade modular kitchens.

- Some raw materials are purchased from foreign countries. Instead, they can be purchased within the country, especially, from nearby places. This would save costs to the company by way of reduction in duties and taxes, transportation cost and avoid the time delay in procurement. The proposed new expansion may be eligible for claiming subsidies under "Make in India" scheme, subject to conditions.
- The proposed expansion necessitates BKPL to go in for newer technology, Normally, with technology upgradation, the products become cheaper, and services can be provided efficiently in addition to achieving higher production.
- The left-over material such as, pieces of granite, aluminum, and plywood materials, separately in the assembly room, can be sold to the manufacturing companies using those items.
- By enhancing the website, online sales may be increased as the company can directly have contact with more customers. This will increase the revenue as well as reputation.

2.8 Calculation of Final settlement amount:

Final settlement amount shall be computed by using formula:

$$\text{Formula} = \frac{(N)(RR\text{-}R)(dtm/DY)}{[1 + RR(dtm/DY)]}$$

Where,

N = the notional principal amount of the agreement

RR = Reference Rate for the maturity specified by the contract prevailing on the contract settlement date;

FR = Agreed-upon Forward Rate; and

dtm = maturity of the forward rate, specified in days (FRA Days)

DY = Day count basis applicable to money market transactions which could be 360 or 365 days

(i) Final Settlement amount if actual rate happens to be 8.50%.

$$= \frac{(₹\ 5\text{crore})(0.085 - 0.083)(4/12)}{[1 + 0.085(4/12)]}$$

$$= \frac{(₹\ 5\text{ crore})(0.00067)}{1.0283} = ₹\ 32{,}578$$

Thus, the Banker will pay BKPL a sum of ₹ 32,578.

(ii) Final Settlement amount if actual rate happens to be 7.50%.

$$= \frac{(₹\ 5\text{crore})(0.075 - 0.083)(4/12)}{[1 + 0.075(4/12)]}$$

$$= \frac{(₹\ 5\text{ crore})(0.00267)}{1.025} = -\ ₹\ 1{,}30{,}244 \text{ or}$$

Thus, the BKPL will pay Banker a sum of ₹ 1,30,244.

CASE STUDY: 3

About Real Products Limited (RPL)

RPL offers to its client's hardware solutions, including chip manufacturing planning and integration for a variety of uses. It operates throughout the globe, but most of its business is located in Asia Pacific region. RPL is more comfortable taking the risks for which it has strong controls.

Recent observations by the Board of RPL

In a recently concluded Board meeting, while reviewing risk management practices of RPL, one of the Board members indicated about the increased threat of new and severe non-financial risks which are now challenging basic assumptions about control effectiveness. For example, RPL so far has relied on automation to speed up processes, lower costs, and reduce manual errors. At the same time, -the risks of large-scale breaches and violations of data privacy have increased dramatically, heightening during the COVID-19 crisis as digitization accelerated substantially. With less risk of manual errors but greater risk of large-scale failures, RPL will require to adjust their risk appetites and associated controls to reflect evolving risk profiles.

The Chief Risk Officer (CRO) of RPL agrees with the view of the Board member. He informed the Board that risk management strategies require revision and it should also cover the event of a major control breakdown, so that RPL is able to switch quickly to crisis-response mode, guided by an established set of procedures.

He further agreed that RPL has done little to prepare for crisis, seemingly taking an attitude that it won't happen here and hence risk culture also need to be improved. There is a consensus that RPL will need to build crisis-preparedness capabilities systematically. As the COVID-19 crisis has demonstrated, companies with well-rehearsed approaches to managing through a crisis have been more resilient to shocks.

The CRO further briefed the Board that preparation in this respect would involve identifying the possible negative scenarios unique to RPL and the mitigating strategies to adopt before a crisis hits. That includes periodic simulation involving both senior management and the Board. There is a plan to maintain and periodically update a detailed crisis register. Their strategies would typically include details on when and how to escalate issues, preselected crisis-leadership teams, resource plans and road maps for communications and broader stakeholder stabilization.

Investment activities of RPL

RPL is a cash surplus company and as a part of investment policy approved by the Board it has made investment in equity, bonds, risk free securities, mutual fund and REITs. A team of professional in the treasury is managing the investment. Internal auditor has pointed out several control weaknesses and lack of development of risk appetite in the context of control culture of the company in this area. The management has directed the CRO to ensure that stress tests are built around changes in market rates and prices that result from pre-specified economic scenarios, including both actual historical and hypothetical market events.

The CRO agreed that not only stress test should become regular feature fo risk management but also stress test results should be used at all levels of RPL, from the trading desk to the Board to monitor and control risk.

The financial instruments including financial assets and liabilities that RPL holds are continuously exposed to fluctuations in markets, such as currency exchange rates, interest rates, and stock prices of investments. Therefore CRO has decided to measure the effect of market fluctuations on the value of financial instruments and derivatives by using Value-at -Risk (VaR) Analysis.

The CRO also informed the Board that he will also report to the Board on a quarterly basis reporting 'at risk' measure such as Earnings-at-Risk (EaR), Earnings-Per-Share-at-Risk (EPSaR), and Cash-Flow-at-Risk (CFaR).

Outsourcing option with RPL

RPL management has been marking efforts to reduce operating costs over a period but has got very little success. Outsourcing of some of the activities may lead to reduction in operating costs. However, the management is not sure about the risk that may arise due to outsourcing. What are the key activities that can be outsourced and what should be looked at Board level before Service Level Agreement (SLA) is entered into with a party that will provide outsourcing services.

Multiple Choice Questions

Choose the most appropriate answer from the given options. (2 x 5 = 10 Marks)

3.1 CRO has decided to measure the effect of market fluctuations on the value of financial instruments and derivatives by using Value-at-Risk (VaR) Analysis. Among the following which one CRO did not use as a basic approach (s) for calculating VaR

(A) Parametric.

(B) Historical simulation.

(C) Mote Carlo simulation.

(D) Differential method.

3.2 The CRO would submit Stress Testing Report to the Board on a regular basis staring from the next quarter. In your opinion which one of the following is incorrect with respect to Stress Test Reports?

(A) They show the potential present value impact of pre-specified scenarios or extreme market movements.

(B) They are used to better capture event risk.

(C) They are a useful complement to VaR analysis.

(D) They are separate and has no connection with VaR analysis.

3.3 RPL has parked its cash surplus into equity, bonds, securities, mutual funds and REITs. Internal auditor has pointed out several control weaknesses including lack of development of risk appetite in the context of control culture of the company. Which one of the following is incorrect with respect to risk appetite?

(A) Risk appetite is a single, fixed concept.

(B) Risk appetite must be integrated with the control culture of the organization.

(C) Risk appetite must take into account differing views at a strategic, tactical and operational level.

(D) Risk appetite should be developed in the context of an organization's risk management capability, which is a function of risk capacity.

3.4 Assuming RPL's Board decided to outsource option, which one of the following combinations of risks would arise as a result of outsourcing?

(A) Strategic risk and reputations risk.

(B) Strategic risk, legal risk and contractual risk.

(C) Concentration risk, contractual risk and systematic risk.

(D) Strategic risk, reputation risk, legal risk, contractual risk, concentration risk and systematic risk.

3.5 The treasury head of RPL has given a risky portfolio of INR 100 crore to his junior to manage it effectively. The portfolio has expected return of 15% and standard deviation of 25%. The risk free rate is 7% Suppose that risky portfolio includes the investment in the given proportions: Stock P - 20%, Stock Q - 30 % and Stock R - 40%. Which one of the following is correct about the Sharpe Ratio of the portfolio?

*(A) 0.32**

(B) 0.375

(C) 0.40

(D) 0.30

** In question paper it was mistakenly was printed as .032.*

Descriptive Questions

3.6 CRO of RPL has decided to measure the effect of market fluctuation on the value of financial instruments and derivatives by using Value-at -Risk (VaR) analysis to monitor and control risk. Do you agree that VaR is a flexible risk measure? Provide cogent reasons to support your answer. ***(3 Marks)***

3.7 What would you include in a brief note to Board if you have been asked to explain "at-risk" measures, such as Earnings-at-Risk (EaR), Earnings-Per-Share-at-Risk (EPSaR), and Cash-Flow-at-Risk (CFaR)? ***(3 Marks)***

3.8 A newly appointed independent director of RPL has approached you to suggest any four test he should be aware of while reviewing risk appetite statement of RPL. Frame four questions that the independent directors can ask in a Board meeting which will help in reviewing risk appetite statement of RPL? ***(4 Marks)***

3.9 The management of RPL has hired you to write a brief Note on the matters that must be reviewed before outsourcing decision is approved. Also include into your Note, the key areas that must be included in SLA before it is signed. ***(5 Marks)***

Answer

Multiple Choice Questions

3.1 (D)

3.2 (D)

3.3 (A)

3.4 (D)

3.5 (A) or (D)

Descriptive Questions

3.6 Yes, VaR is a flexible risk measure. The following reasons support this conclusion:

(a) VaR can be specified for various horizons (generally between 1 day and 1 month).

(b) VaR can be estimated at various confidence level (generally between 90% and 99%).

(c) VaR can be expressed as a percentage of market value or in absolute currency terms (e.g., USD).

3.7 (i) Earning-at-Risk (EaR): EaR is a method of measuring the loss in the earning of the business over a given time period.

(ii) Earning-Per-Share-at-Risk (EPSaR): EPSaR is a method of measuring the loss in the Earning Per Share over a given time period.

(iii) Cash-Flow-at-Risk (CFaR): CFaR is a method of measuring the loss in the Cash Flow over a given time period.

3.8 The following are some of the issues that directors may have to consider and the questions they should ask:

- ❖ A Board should establish and communicate its risk appetite and agree to the level of risk it is prepared to accept in different areas of corporate operation. Which stakeholder should be involved and how should they be engaged?
- ❖ Does the risk culture of the board match to that of the organization and its aspirations?
- ❖ If not, what changes are required and how might they be brought about?
- ❖ What are the risk oversight functions of the board and how effectively are they being discharged?
- ❖ For example, is annual reporting of risk to shareholders fair and balanced?
- ❖ Would confidence accounting present a clearer picture?
- ❖ Within the governance structure, what arrangements have been made for risk governance which involves setting a strategy and policies for the management of risks and monitoring the performance of those to whom risk and security responsibilities are delegated?

3.9 There are several specific aspects that need to be looked into Outsourcing Risk. Hiring of an outsourced vendor/service provider must cover the following aspects:

- 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.

Key areas that must be included in SLA before it is signed:

- ❖ The service agreement with the customers and users may clearly exclude or limit responsibility of the organization for any loss suffered by the customer and user consequent to the technological failure.

- It must be recognized that the organization should not be so obsessed with mitigating the risk that it seeks to reduce the systematic risk - the risk of being in business.
- The risk mitigation tools available should not eat so much into the economics of business that the organization may find itself in a position where it is not earning adequate against the efforts and investments made.

CASE STUDY 4

About the company and its business

There has been a phenomenal growth in the Quick Service Restaurant (QSR) format in India. The QSR format seems to be the perfect mix of maintaining decent consumer connects with being lucrative. Thus, over the years it has become an integral part of the Food and Hospitality Industry. Mashkin Foods Limited (MFL), although is a new entrant but within a short span of time, has established itself as a challenger to exiting players due to its focus on four factors: quality, cost, hygiene and localization of menu. With a healthy demand outlook and improvement in economic activities after second phase of Covid-19, MFL is expected to witness substantial growth. It is also expected that operations of large segment of the unorganized market would get streamlined into organized market.

Past performance of MFL

During first and second phase of Covid-19, MFL's performance came down substantially because of the curbs due to resurgence in Covid-19 cases. But stringent standard operating procedures (SOPs) and the resilient convenience channel helped it in faster recovery after curbs were lifted. MFL revenue has also started rising by setting platform for online booking.

The Board has taken a decision to onboard the customers using its own platform rather than using services of aggregators. This is going to create a huge intangible in terms loyal customer base. Probably, the next challenge for the management to overcome is to understand how different disasters could impact businesses.

Proposed action plans -

With the changed business mix, the management believes that there should be a Business Continuity Plan (BCP). A proper strategy for BCP is also the need of the hour but what should be included in BCP strategy is not clear to the in-house team of MFL. The in-house team is also not clear about the contents that should be included in the BCP.

Further, considering the growing size of the business, the Chief Financial Officer (CFO) also wants Business Impact Analysis (BIA) of the Company. With the help of the BIA and risk assessment in hand, the risk management team can identify a proper recovery strategy.

Observations of the Board of MFL

MFL follows an organization model comprising three of defense. However, it has legacy organizational silos as a result of which effectiveness of each line of defense is inadequate. Liquidity risk management is one of the key concerns of the Board. While reviewing liquidity risk *management process of MFL, the Chairman of the Audit Committee has remarked that understanding of three lines of defense is very important in risk management. Each line- the business, the independent risk management function, and the internal audit function–has specific responsibilities with respect to the end-to-end liquidity risk management process, from overall governance, strategic planning, risk appetite setting, risk identification, assessment and management, through reporting, as well as internal controls. The direction given by the Chairman is to leverage the three lines of defense to align an integrate management of liquidity risk.*

MFL and its subsidiary company

MFL has recently formed a subsidiary that would exclusively work in food delivery business. The CFO has indicated that working capital facilities will be availed from a new generation digital bank that can support the growth potential of the Company. CFO and his team would prepare the proposal for working capital loan assessment and get an approval from the Board before submissions to the bank.

Few independent directors of MFL are from non-financial background and they have asked the CFO to explain the terms like Maximum Permissible Bank Finance (MPBF), sanctioned limit, drawing power (DP) operating limits etc. and also the working capital loan assessment process in the next Board meeting.

Further, CFO wants to take permission of the Board for making investment in Zero Coupon Bond (ZCB) of AAA rated corporates. The Board has asked the CFO to make presentation on risk involved in this investment before the permission is granted.

New business opportunity for MFL

Over the last two years MFL has created a team of programmers. It all started with own online platform but they have now started getting orders from other businesses who want to develop online platform. MFL has got one such project for developing online platform that will be completed in a few year's time. Payments from the customer are expected at the end of the project.

Expected cash flows of MFL

MFL is financed on the basis of INR MIBOR + 1% markup. It can deposit surplus cash for INR MIBOR - 0.25%. The estimated cash position is:

3 to 6 months	*6 to 9 months*	*9 to 12 months*	*12 to 24 months*
INR 10 Million Deficit	*INR 15 Million Deficit*	*INR 20 Million Deficit*	*INR 5 Million Surplus*

As is evident form the above table there is a cash shortage up to Month 12 and MFL will draw under the financing facility. The risk MFL is that if the money market rate increases, as a result of which interest payable will increase. From month 12 there is a cash surplus. The risk for the

MFL then is that if the money market rate decreases and as a result interest receivable from the future deposits will decrease.

For the time being the CFO and his team decided to eliminate interest risk by using Forward Rate Agreement (FRA). However, they will also consider Interest Rate Swap (IRS) and Collar in Future.

The quotes from the bank for FRA are as under:

Period	***FRA quote***
1 x 4	*2.01-03%*
2 x 5	*2.10-12%*
3 x 6	*2.20-22%*
4 x 7	*2.28-30%*
5 x 8	*2.37-39%*
6 x 9	*2.43-45%*
9 x 12	*2.60-62%*
12 x 24	*2.82-84%*

But the Board has made it clear that these would be approved only after proper understanding of valuation and functioning of such instruments. The CFO has promised to make a presentation to the Board of Directors in this respect.

Multiple Choice Questions ***(2 x 5 = 10 Marks)***

Choose the most appropriate answer from the given options.

4.1 Which one of the following is incorrect with respect of assessment of working capital requirements of MFL?

(A) MPBF is also called sanctioned limit.

(B) MPBF is also called DP.

(C) DP can very across the quarter.

(D) MPBF is bifurcated into cash credit component and loan component.

4.2 CFO of MFL wants to make investment in ZCB of AAA rated corporates after analyzing risk involved in it. Which of the following risks will not affect a listed ZCB?

(A) Reinvestment Risk.

(B) Default Risk.

(C) Credit Risk.

(D) Market Risk.

4.3 CFO has decided to eliminate interest risk by using FRA and with due consideration of IRS. Which of the following is incorrect with respect to various dates in a basis swap?

(A) The final payment date and the end of the contract is always called termination date.

(B) The final payment date and the end of the contract is called termination date except overnight indexed swap.

(C) Re-fixing dates are calculated from the dealing date.

(D) Value date and effective date are the same.

4.4 What Collar transaction would be done by MFL for hedging a float rate borrowing?

(A) Buy a Floor and sell a Cap.

(B) Buy a Cap and sell a Floor.

(C) Buy both Cap and Floor.

(D) Sell both Cap and Floor.

4.5 Which one of the following is incorrect with respect to IRS assuming MFL wants to hedge interest risk on a float rate borrowing?

(A) Using IRS also allows benefiting from the lower interest rate during the life of the IRS.

(B) IRS synchronizes cash flow flows.

(C) IRS can be used to access a market where otherwise access is not possible due to poor credit rating.

(D) IRS would require periodic valuation in the accounts.

Descriptive Questions.

4.6 Periodic 'check the box' kind of review of controls and risks is inadequate of MFL. In line with the directions of the Chairman of Audit Committee, you have been asked to advice how to leverage the three lines of defense to align and integrate management of liquidity risk? ***(6 Marks)***

4.7 The Board of MFL has asked you to identify and briefly explain actions that should be taken before BCP is written. Also explain briefly various elements that should from part of a BCP strategy? ***(4 Marks)***

4.8 What are the contents of BIA and what benefits it is likely to provide to MFL?

(3 Marks)

4.9 What action should CFO and his team should take to hedge interest risk that is likely to arise in MFL? ***(2 Marks)***

Answer

Multiple Choice Questions

4.1 **(B)**

4.2 **(A)**

4.3 **(A)**

4.4 **(B)**

4.5 **(A)**

Descriptive Questions

4.6 Basel II norms indicate the recommended governance of operational risk in an organisation by three lines of defence model. This is followed by banks in India too as part of regulatory guidance on operational risk management. However, this concept 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.

The ***First line of defense*** 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.

The ***Second line of defense*** 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 defense. The typical roles played by the second line of defense are:

- Working with the process owners (first line of defense) to set up the risk and control matrix.
- Advise / recommend the method and frequency of testing of controls to the first line of defense, 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.

The ***Third line of defense*** 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 defense 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.

4.7 Business continuity refers to a concept that encompasses technology and business process framework that ensures that in times of unscheduled disruption of the routine process, an alternative mode of management of priorities, technology solutions, and business processes is undertaken.

Business Continuity is now an integral part of Operational Risk Management. Any of the risks we enumerated above, can be triggered as part of an overall disruption that is caused by any or a combination of the following reasons:

(a) Natural disaster affecting services of either technology solutions and/or the business process itself; to elaborate, a situation to invoke BCP may exist in a case of natural disaster like flood, where staff of a company are unable to go to office; or, it may be a combination of situation where the technology solutions of the company that is required for daily functioning of the organisation is also not working;

(b) Civic infrastructural failures like essential services of electricity or transport being brought down due to terrorist attacks or natural disasters;

(c) Keyman risk due to death or incapacitation of key decision makers in a company leading to chaos in management of the company;

(d) Failure of one department or function to do their assigned tasks in a case of disruption may cause the entire process to delivery of the organisation;

(e) In current business scenario, several organisations concentrate their operational activities in one major operational hub; these organisations are at a higher BCP risk than the ones with operations in several hubs if they are geared to support each other in a moment of crisis.

Elements forming part of BCP Strategy:

- Identification of potential risks and vulnerabilities impacting the business
- Risk assessment
- Determination of recovery alternatives
- Defining and communicating the roles and responsibilities of key personnel.
- Recovery plan implementation
- Testing and Training

4.8 Business Impact Analysis (BIA) is an analysis of the impact on the critical functions and systems of an organisation.

A BIA must ideally cover following aspects:

- Minimum % that the process must continue to run in BCP scenario (say 10 %, 50 % etc. of original volume / workload),
- Minimum resourcing required to carry it out,
- Maximum permissible time to allow a task to be not performed (Recovery Time)
- Category of impact due to disruption (customer impact, regulatory impact, financial loss or risk to employee health and life),
- Deriving the criticality from these parameters (including consideration for normal days and month-ends),
- Minimum technological and infrastructural requirements in the BCP site.
- This exercise will lead to decisions on which processes / activities need to be covered under BCP on priority, and which can be scoped out (and for how long).

Benefits of BIA:

- Critical business functions / processes are revealed.
- Potential threats to the above are identified.
- Helps to quantify the threats

Allows the organisation to prioritise the functions / processes for recovery.

4.9 The CFO and his team should take the following steps to hedge interest rate risk.

Action	FRA Type	Notional Principal	FRA Rate
Buy	3 X 6	10	2.20%
	6 X 9	15	2.45%
	9 X 12	20	2.62%
Sell	12 X 24	5	2.82%

CASE STUDY: 5

INTROUDCTION

The Tamil Nadu Government, by a Notification issued in June, 2018, banned the manufacture, storage and use of plastic products such as cover plastic carry bags, plastic plates, coffee, tea, water cups, water pouches and packets irrespective of their thickness w.e.f. 1st January,2019, chiefly because of short-term and long-term environmental damage and health hazard when such products are used in daily life.

Carryon Plastics Private Limited (CPPL) is situated in an industrial estate at Coimbatore. The company was manufacturing plastic carry bags, cups and plates of various sizes and thickness, since the year 2010.

Mr. Peter is the Chairman of CPPL and he looks after production, marketing, sales and accounts. Mr. Peter analysed various issues of the ban and the implications the same would have on the future of the Company.

There ware no sales since January 2019 and the value of stock in hand on 31st December,2018 was ₹ 2 crores. CPPL has proposed to sell the closing stock at a throwaway price.

Alternate Plans:

The chairman came across a recent innovation which used plastics for laying roads.

It was also decided to explore the possibility of manufacturing biodegradable cloth, paper and jute bags and also for producing cups and plats made of lotus leaves and outer cover of Arecanut tree flowers.

As the ban did not cover plastic used for packing of milk and milk products (dairy products), oil, medicine and medical equipment, the machinery hitherto used for manufacturing plastic products can to be reconditioned to manufacture such exempted items.

Mr. Peter has proposed the following product mix for the manufacture of items from biodegradable materials:

Products to be manufactured from	*in %*
Jute	*10*
Cloth	*35*

Lotus leaves	*5*
Outer cover of Arecanut	*10*
Paper	*40*

Project Cost

Item	***₹ (in crores)***
Cost of new machinery	*2.00*
Reconditioning of existing machinery	*0.80*
Raw materials cost	*0.50*
Cost of Training to workers	*0.20*
Working Capital Required	*1.50*

The required funds are proposed to be obtained by raising a 10-year term loan of ₹ 4 crores from the Bank (on mortgaging immovable properties of directors and hypothecation of new machinery) and the balance from the shareholders.

Even before the new project is implemented, Mr. Peter considered the possibilities of manufacturing products made of Lotus leaves (Project A) or Coconut fiber (Project B). For both the projects, initial investment is ₹ 10 Lakhs and the discount rate is 10 percent.

Issues to be addressed:

As, there is going to be an abrupt change in the manufacturing of products, the following aspects are to be carefully taken care of:

- *The market for the new products,*
- *Ways of cost saving through a better management,*
- *Issues relating to competition start-up disruption, competition and regulatory requirements and*
- *The probability of success of the product mix and the possibility of changing combination, if there is need in the future.*

CPPL is going to enter an unexplored area which in turn means that it would be taking a lot of risk, as the uncertainty in the business cannot be predicted. The degree of uncertainty and the impact of the risk outcome combined together from the magnitude of the risk. The management of CPPL would like to know the overall effect that these would have on the company. Mr. Peter felt that a proper risk assessment covering the entire operations of the Company is required as it is very important to have more systems and controls over its operations which have to be tested periodically for their efficiency and effectiveness.

As the risk management consultant of the Company, you are required to answer the following questions:

Multiple Choice Questions

Choose the most appropriate answer from the answer options. (2 x 5 = 10 Marks)

5.1 CPPL decided to explore the possibility of manufacturing biodegradable jute bags in place of plastic bags. The risk measures are meant to correctly reflect diversification effects and should facilitate effective decision marking. The answer to this would be found in the theory of:

(A) Delta-Normal Method.

(B) Coherent Risk measures.

(C) Bootstrap Simulation.

(D) Full Revaluation Method.

5.2 CPPL has a proposal to buy hedge cover ₹ 25 lakhs from the bank. If the Credit Default Swap spread is 40 basis points, then company would have to pay to the bank annually an amount of:

(A) ₹ 1,00,000

(B) ₹ 1,000

(C) ₹ 10,000

(D) ₹ 40,000

5.3 After the Government Notification banning production of plastic bags, CPPL has decided to sell the closing stock at a throw away prices and quickly shift to production of products from jute. Which of the following is the MOST important objective of Post-loss Risk Management?

(A) to reduce the apprehensions of the stakeholders.

(B) to treat the loss exposures in the most cost-effective ways.

(C) to meet the legal obligations.

(D) to continue the operations.

5.4 For improving their risk governance, the Board of Directors of CPPL would MOST likely perform which of the following under sound risk governance practices:

(A) approves the risk appetite framework and ensures it is directly linked to the business strategy, capital plan and compensation.

(B) meets, at a minimum quarterly, with the firm's supervisor to discuss the scope and coverage of the work of the risk management function.

(C) reviews the third-party opinion of the design and effectiveness of the overall risk governance framework on an annual basis.

(D) is involved in the setting of risk-related performance indicators for business units.

5.5 *It is estimated that there is probability of 20% delay in completing a particular stage of the proposed project, once in every two months. Assuming that the proposed project is expected to be completed in 6 months, what is the probability that the project gets delayed in the sixth month?*

(A) 20%

(B) 5%

(C) 12.50%

(D) 60%

Descriptive Questions

5.6 *Explain the specific benefits of the Risk Management Plan to the Board of Directors of CPPL who shall be responsible for framing, implementing and monitoring the same.*

(6 Marks)

5.7 *CPPL's operations consist of various business functions and there are various activities that are specific to each functional area of operation. Explain briefly the business functions which can be assessed from a risk perspective.* ***(5 Marks)***

5.8 *Possible net cash flows of the alternate Projects A and B and their probabilities are given as below. Calculate the expected net present value (single period) for each project. Based on your calculations, which Project that you would suggest? (Please give your workings)*

	Project A		***Project B***	
Possible Event	*Cash Flow (₹)*	*Probability*	*Cash Flow (₹)*	*Probability*
A	*8,00,000*	*0.25*	*4,00,000*	*0.31*
B	*10,00,000*	*0.15*	*20,00,000*	*0.14*
C	*12,00,000*	*0.28*	*16,00,000*	*0.25*
D	*14,00,000*	*0.21*	*12,00,000*	*0.18*
E	*16,00,000*	*0.11*	*8,00,000*	*0.12*

Note: Discount Factor 10% for 1 year = 0.909 ***(4 Marks)***

Answer

Multiple Choice Questions

5.1 (B)

5.2 (C)

5.3 (D)

5.4 (A)

5.5 (A)

Descriptive Questions

5.6 The specific benefits of the Risk Management Plan to the Board of Directors of CPPL are as follows:

- Saving valuable resources: time, income, assets, people and property can be saved if fewer claims occur
  - By having a proper risk management plan, the company would be in a position to save the valuable resources.
- Creating a safe and secure environment for staff, visitors, and customers
  - By following safety measures as envisaged in the risk management plan, safe and secure environment would be created for all the people.
- Reducing legal liability and increasing the stability of your operations
  - Legal liabilities can be reduced and stability in the operations can be increased.
- Protecting people and assets from harm
  - People and assets can be protected from harm by following a systematic risk management plan.
- Protecting the environment
  - The environment also would be protected by following a well-defined risk management plan.
- Reducing your threat of possible litigation
  - Threats of possible litigation can greatly be reduced.
- Defining your insurance needs to save on unnecessary premiums
  - The need of insurance can be known in advance with the analysis of the results of the risk management plan.

5.7 CPPL's various business functions that can be assessed from a risk perspective are as follows:

- **Strategic –** These include business model risk factors in terms of product demand factors, availability of supply chain inputs at competitive rates, innovation, competition financial stability and capital access, etc. These relates to the achievement of long-terms strategic objectives of the entity. They can be affected by availability of capital, country and political risks, legal and regulatory changes, reputation and changes in the economic environment.

- As the company is venturing into new areas of manufacturing, marketing and selling, it is very essential the operations relating to these areas are to be carefully analysed from risk perspective. Alternate sourcing of products and supplies to be evaluated. These measures could bring down the costs of operations and assist to achieve the objectives of the company in an efficient manner.
- **Operational –** These include process execution and day-to-day issues that the entity is exposed to.

  Several operational processes have to be streamlined so that the day-to-day issues arising out of the same could be well tackled.
- **Financial –** These concern the effective management and control of the finances of the organisation and the effects of external factors such as availability of credit, working capital, foreign exchange rates, interest rate movement and other market exposures.

  The finances of the company have to be better managed in the above aspects.
- **Knowledge management –** Where the entity does not manage effectively it only manages information in its activity stream. The effective management and control of the knowledge resources includes production, protection and communication of knowledge. Factor contributing to knowledge risks include the unauthorized use or abuse of intellectual property/competitive technology. Internal factors may include loss of key staff.

  The company is entering into new areas of production which requires great amount of time and money to be spent on training of the staff members. It is also to be ensured that the proprietary knowledge is not stolen and sold to the competitors.
- **Compliance management –** Business entity has to comply with a lot of laws and regulations that are directly or indirectly applicable to its business. The laws vary from envir4onmental protection to specific state laws in the region which the entity may operate. To manage compliances effectively, entities undertake a detailed compliance risk assessment exercise wherein each applicable law is mapped for specific compliance obligation and the mitigating compliance action plan against it is documented. Such activities can be undertaken in-house or externally facilitated, however, the primary ownership and responsibility of compliance management cannot be transferred to a third party such as consultant or auditor.

  The present-day regulatory requirements are to be met with meticulously. Otherwise these may lead to interest, fines and penalties to be levied on the company Non-compliance of the relevant laws, rules and regulation may in fact hamper the growth of the company. Risks relating to these have to be carefully addressed.

5.8 Calculation of Expected Value for Project A and Project B

	Project A			Project B		
Possible Event	**Cash Flow (₹)**	**Prob.**	**Expected Value (₹)**	**Cash Flow (₹)**	**Prob.**	**Expected Value (₹)**
A	8,00,000	0.25	2,00,000	4,00,000	0.31	1,24,000
B	10,00,000	0.15	1,50,000	20,00,000	0.14	2,80,000
C	12,00,000	0.28	3,36,000	16,00,000	0.25	4,00,000
D	14,00,000	0.21	2,94,000	12,00,000	0.18	2,16,000
E	16,00,000	0.11	1,76,000	8,00,000	0.12	96,000
ENCF			11,56,000			11,16,000

The Net Present Value for Project A is (0.909 × ₹ 11,56,000 – ₹ 10,00,000) = ₹ 50,804

The Net Present Value for Project B is (0.909 × ₹ 11,16,000 – ₹ 10,00,000) = ₹ 14,444

Suggestion: Since NPV of the project A is higher it should be chosen.