

# **Institute of Actuaries of India**

**Subject SA5 – Finance**

**November 2012 Examinations**

## **INDICATIVE SOLUTIONS**

### **Introduction**

The indicative solution has been written by the Examiners with the aim of helping candidates. The solutions given are only indicative. It is realized that there could be other points as valid answers and examiner have given credit for any alternative approach or interpretation which they consider to be reasonable

## Solutions

### Answer 1 a) i Liquidity risk

BB has recently made an acquisition through a relatively large short term syndicated loan. If RR faces difficulty in raising funds to pay back the short-term syndicated loan at maturity, RR may be forced to sell securities from its investment portfolio on short notice, and at unfavorable prices.

BB invests in OTC derivatives. RR could be required to liquidate positions prior to expiration at unfavorable prices.

### ii Settlement risk

BB invests in OTC derivatives that involve settlement through the execution of bilateral agreements. The risk is that one party could be in the process of paying the counterparty while the counterparty is declaring bankruptcy.

In the case of currency swaps, settlement risk is increased because the contracts often require the exchange of principal in addition to interest payments.

**Answer a).ii** Four other risks that BB is exposed to are:

### Credit Risk

Due to long position in option, BB has exposure to credit risk in the sense that if the counterparty goes bankrupt, a loss is likely to be experienced. Option is initially an asset and remains an asset for the whole of the life of the option. If the counterparty (i.e. the writer of the option) goes bankrupt, the option holder makes a claim and may eventually receive some percentage of the value of the option.

Moreover, BB has invested in OTC products and derivatives whose value can be positive or negative going forward. For example, when a company first enters into a swap, it has a value equal to or very close to zero. As time passes, interest rates change and the value of the swap become positive or negative. If the counterparty defaults when the value of the swap is positive and a loss is likely to be experienced. If the counterparty defaults when the value of the swap is negative, no loss is made.

### Model Risk

BB has long position in structured equity and credit products, in addition to OTC products, and thus is potentially exposed to Model Risk, which is the risk of error in the risk estimates due to inadequacies in the risk measurement models we use.

Model risk can arise from many different sources, namely:

- **Stochastic processes might be mis-specified.** We might assume that a stochastic process follows a geometric Brownian motion when it is in fact fat-tailed, we might mistake a lognormal P/L process for a normal one, and so forth. The solution is of course to use the right stochastic process—but identifying the right process might not be easy.
- **Missing risk factors.** We might ignore stochastic volatility or fail to consider enough points across the term structure of interest rates.

- **Mis-specified relationships.** We might misspecify relationships between variables—for instance, we might ignore correlations or get correlations wrong in VaR estimation.
- **Transactions costs and liquidity factors.** Many models ignore transactions costs and assume that markets are perfectly liquid. Such assumptions are very convenient for modelling purposes, but can lead to major errors where transactions costs are significant or market liquidity is limited.

### Interest Rate risk

Bank is exposed to interest rate risk by virtue of adverse impact of movements in interest rates on both its assets and liability side of the balance sheet, in addition to its operating profitability. But, accepting this risk is a normal part of banking and can be an important source of profitability and shareholder value. However, excessive interest rate risk can pose a significant threat to a bank's earnings and capital base. Changes in interest rates affect a bank's earnings by changing its net interest income and the level of other interest sensitive income and operating expenses. Changes in interest rates also affect the underlying value of the bank's assets, liabilities, and off-balance-sheet (OBS) instruments because the present value of future cash flows (and in some cases, the cash flows themselves) change when interest rates change.

### Currency Risk

BB bank faces currency risk in form gains or losses from exchange rate changes that occur while translating its financial statement represented in USD to financial statement in INR to consolidate and produce a bank level financial statement.

**Answer b).i** Stress testing is particularly good for quantifying what we might lose in crisis situations where 'normal' market relationships break down and VaR and ETL risk measures can be very misleading. Stress tests can identify our vulnerability to a number of different crisis phenomena:

- **Breakdowns in 'normal' correlation relationships.** In crises, correlations often swing to extreme values, and losses can be much greater than suggested by VaR estimates based on 'normal' correlation assumptions.
- **Sudden decreases in liquidity.** Markets can suddenly become very illiquid in crisis situations, bid-ask spreads and order execution times can increase dramatically, and risk management strategies (e.g., such as those based on dynamic trading) can become unhinged, leading to much bigger losses than anticipated.
- **Concentration risks.** Stress tests can sometimes reveal that we might have a much larger exposure to a single counterparty or risk factor than we had realised, taking into account the unusual conditions of a crisis. VaR or ETL measures can overlook such concentration risks because they tend not to pay much attention to crisis conditions.
- **Macroeconomic risks.** Stress tests are also better suited for gauging our exposure to macroeconomic factors such as the state of the business cycle, the economic condition of a particular country, and so on.

And stylized scenarios based stress testing is type of the stress testing in which we evaluate the impact of specified scenarios (e.g., such as a particular fall in the stock market) on our portfolio. The emphasis is on specifying the scenario and working out its ramifications.

The stylized scenarios are scenarios in which a simulated movement in one or more major interest rates, exchange rates, stock prices or commodity prices is considered. These scenarios can range from relatively moderate changes to quite extreme ones. Stylized scenarios have been used for a long time in asset–liability management, where they are suited to handling portfolios that are exposed to a small number of risk factors. The usual idea is to imagine hypothetical changes in the value of each risk factor and then use pricing equations (e.g., simple linear equations for straightforward positions, duration or duration–convexity approximations for bonds, or delta or delta–gamma approximations for options) to determine the change in the portfolio value resulting from the market factor change.

Some possible scenarios can be parallel yield curve shifts of plus or minus 100 basis points, yield curve shifts of plus or minus 25 basis points, stock index changes of plus or minus 10%, currency changes of plus or minus 6%, and volatility changes of plus or minus 20%.

If the institution is concerned about more extreme events, it might also want to consider such relatively rare events as 5- or 10-standard deviation changes in the relevant underlying price.

We might also want to consider the impact of other factors too, such as changes in the slope or shape of the yield curve, a change in correlations, and a change in credit spreads (e.g., a jump or fall in the TED spread).

**Answer b).ii** Four other stress testing methods are:

a. Actual extreme events

Focuses on the portfolio effects of events that have occurred in the past but may have a higher probability than given by the probability model or specific historic time period used in developing the VAR estimate.

b. Hypothetical events

Focuses on the portfolio effects of events that have not occurred and are assigned a low probability.

c. Stressing models, including factor push

Emphasizes a range of possibilities and may give insight into the probability of different scenarios, and portfolio sensitivities to various combinations of events.

d. Stressing models, including maximum loss optimization or worst case scenario analysis

Identifies the risks that are most likely to occur in the worst case and are most important to control.

**Answer c) Investment in MBS-CMO vs. MBS-PT**

The basic mortgage-backed security structure is the pass-through. As the name implies, a pass-through passes through the monthly principal and interest payments (less a servicing fee) from a pool of mortgage loans to holders of the security. Thus, investors in the pass-through are, in effect, buying shares of the cash flows from the underlying loans.

MBSs are more complex and challenging than traditional non-callable bonds, or even standard callable corporate. Much of this complexity arises from mortgagors' option to prepay their loans at any time. Thus, the cash flows from an MBS depend on the rate at which the underlying loans are

prepaid. Prepayment rates, in turn, depend on various factors, such as mortgage rates, economic conditions, and mortgage characteristics.

MBS-Collateralized Mortgage Obligations (CMOs) carve up mortgage cash flows in a variety of ways to create securities with specific prepayment and maturity profiles, which is implemented through the waterfall structure of cash flows where higher order tranches have higher priority than lower order tranches, and overcollateralization.

BB banks should invest in higher tranche MBS-CMO instead of MBS-PT as it will have lesser exposure to extension risk. As interest rate rise, principal prepayments should slow and thus the average life and effective duration of an MBS security should increase.

Given that, in CMOs, lower order tranches provides cushion to higher order tranches and overcollateralization, increase in the average life of CMOs will be relatively smaller.

However, if only lower order tranche of MBS-CMO is available for the investment, then MBS-PT is preferred over CMO as the extension risk of the lower order tranche is higher than that for MBS-PT.

### **Risk measure for the MBS/CMOs**

In MBS-CMO, cash flow is not fixed but dependent upon changing interest rate in future, and thus is dynamic in nature. As conventional duration considers static cash flow, it insufficiently captures risk of any interest rate contingent security. Instead, effective duration should be used as risk measure as it considers dynamic cash flow.

Moreover, Monte Carlo simulation should be used to calculate effective duration because it allows changing prepayment rates stochastically due to various interest rate changes and accordingly calculates the average price of the MBS.

### **Valuation measure of MBS/CMO**

The yield spread, the standard measure of incremental return over a benchmark Treasury, is inappropriate valuation measure as it compares an MBS/CMO to a single, somewhat arbitrarily chosen point on the yield curve. Because an MBS.CMO returns principal over a period of time, rather than in one lump sum, it would be preferable to compare it to an appropriate portfolio of Treasuries. Moreover, MBS/CMO cash flows vary with interest rates, typically in a manner adverse to the investment holder. The cost of such prepayment variation needs to be incorporated in any measure of the MBS's return relative to Treasuries.

**Option adjusted spread (OAS)** is the preferred measure, as it accounts for embedded options. It needs to be added to the treasury yield curve in a pricing model to discount a security payment to match its market price.

The steps in the calculation of OAS are as follows:

- 1 Using computer generated pseudo-random numbers and the term structure model, hundreds of hypothetical interest rate paths are simulated, including short-term rates for discounting and longer-term rates that are important for prepayment analysis;
- 2 On each interest rate path the prepayment model is used to project prepayment rates and, hence, the MBS's cash flows; and

3 For each path, the present value of the cash flows is calculated with the discount rates being the short-term forward rates along that path plus a specified OAS.

To find the OAS corresponding to a given market price, we start with an initial estimate for the OAS and use iteration to estimate OAS such that the discounted PV for it matches with the given market price.

**Answer d)** A forward contract is an over-the-counter contract that allows us to lock in an interest now for a specified future period of time. For example, a forward contract  $F(R_f, T_1, T_2)$  means that interest rate  $R_f$  will be applicable on a loan from time  $T_1$  to  $T_2$ , and both  $T_1$  and  $T_2$  are in the future such that  $T_1 < T_2$ .

To hedge a floating loan, we should buy a forward as it allows us to lock in a rate now, thereby enabling us to transform a floating loan to the fixed loan.

For example, assuming that floating rate applicable for the next period is  $L_1$  (six-month Libor rate) + spread and six-month Eurodollar forward on the rate reset date is quoted at  $F_1$ .

On the rate reset date, rate on the loan =  $(L_1 + \text{spread})$

Value of Eurodollar forward =  $L_1 - F_1$

Net rate applicable =  $L_1 + \text{spread} - (L_1 - F_1) = F_1 + \text{spread}$

A Eurodollar futures contracts are futures contract on the three month Eurodollar interest rate. It is price quoted, which means that if  $Q$  is the quoted price for a Eurodollar futures contract, it allows to lock in a rate of  $(100-Q) \%$  now for a future period. For example, if the price for a future is 95.7, it allows us to fix a rate of 4.3 %  $(100-95.7)$ . And the exchange defines the value of one contract as 10,000  $[100 - 0.25 (100-Q)]$ , and thus its contract quote decrease by USD 25 for each basis point increase in rate.

To hedge a floating loan, we should sell an Eurodollar future as in case of increase in rate, as due to increase in rate, the contract quote will decrease, which will result in positive value for us.

As BB wants to hedge the floating loan on its book, it should sell Eurodollar futures or buy forwards, as the floating loan is based on Libor rates with spread depending upon the borrower, Eurodollar futures/forwards based on Libor seems to provide natural hedge.

In the question, forwards rate and futures rate are the same, though forwards rate should be less than futures rate due to convexity adjustment. Consequently, Eurodollar forward is priced higher in comparison to Eurodollar futures, and thus we should use Eurodollar futures among Eurodollar forward and Eurodollar futures for our hedging purpose.

Moreover, forward has higher counterparty risk due to its OTC nature, though it could be mitigated through netting, collateralization, etc.

**Answer e)** Three ways to minimize credit losses are:

- Netting

It states that if counterparty defaults on one contract with the financial institution then it must default on all outstanding contracts with the financial institution. It can substantially reduce credit risk for a financial institution.

- Collateralization

Collateralization is a two way agreement. This means that company A is required to post collateral when the value of the outstanding contract is positive to company B and company B is required to post collateral when the value of the outstanding contracts is positive to company A.

The collateralization serves the same function as the margin in futures contract and can significantly reduce the credit risk. If company A is unable or unwilling to meet a demand for additional collateral, the collateralization agreement will state that company B has the right to close out all outstanding contracts.

- Downgrade triggers

These are clauses in contracts with counterparties that state that if the credit rating of the counterparty falls below a certain level, say A, then the contract is closed out using a pre-determined formula with one side paying a cash amount to the other side. Downside triggers leads to a significant reduction in credit risk, but they do not completely eliminate credit risk. If there is a big jump in the credit rating of the counterparty, say from A to default, in a short period of time, the financial institution will still suffer a credit loss.

**[Total Marks – 38]**

**Solution :****Answer 2(a)**

Key Stages of the ECM Process:

Stage 1: Define the purpose of the model

Is the model intended to meet regulatory requirements or is it meant for internal management processes?

The purpose of the model will help in determining

- How flexible the model should be
- The level of detail and accuracy to be captured by the model

Stage 2: Define the key risks to be modelled

This stage will involve

- Identifying the appropriate risks and ranking them in the order of importance. More important risks need to be modelled more carefully and in more detail
- The typical risks will include market risk, credit risk and operational risk
- Allowing for any diversification or correlation between risks

Stage 3: What should be the modelling approach?

- A deterministic model [based on fixed parameters] can be used in conjunction with scenario and stress testing
- Alternatively a stochastic model coupled with simulation can be used for producing the distribution of likely outcomes

Stage 4: Define appropriate risk measures

- Examples of such risk measures are VaR and Tail VaR
- The aims of the company together with its risk appetite needs to be considered for establishing an appropriate risk measure

Stage 5: Decide on the modelling criteria

This step involves deciding upon a target to be achieved (e.g.: 99.5% Confidence Level) which in turn will depend upon the purpose of the model e.g.: obtaining a particular investment grade rating or meeting regulatory requirements

Stage 6: Decide upon the approach for implementing the model

- Should the ECM be applied across the company as a whole or should separate models be applied to individual business lines and the component models be integrated together.

**[10]**

**Answer 2(B)**

Uses of Economic Capital

The two principal uses are

- It can be used for meeting regulatory requirements. For example, under Solvency II, insurance companies can use their own Economic Capital Models to determine their regulatory capital requirements
- Economic Capital represents the amount of capital required to withstand a certain level of loss. Hence EC can be integrated with the company's internal risk control procedures or its ERM process.

[2]

**ANSWER 2(c)**

Drawbacks of the Suggestion

- It needs to be recognised that although EC is an important measure to be embedded in the ERM process, it cannot be relied upon as the only means of mitigating risk. This is due to the following reasons:
- Risk is driven by many factors which tend to change over time. It is doubtful whether an ECM can capture all these factors to the desired level of accuracy
- ECM is typically based on simplifying assumptions which might probably result in the company accepting more of a certain type of business that benefits from this assumption
- Relying on EC as the primary tool of risk mitigation can lead to a situation where the ECM ends up driving the business rather than the business being led by educated judgement calls
- ECM cannot incorporate risks arising from factors such as regulatory changes or societal changes. These risks also need to be identified, measured and mitigated.

[5]

**Answer 2(D)**

Relative Merits and Demerits of Structural Models Vs Reduced Form Models

Structural Models

(+) Structural models are heavily influenced by the equity share price and more importantly by the volatility of share price. Hence the principal advantage is that structural models can change quickly in response to changes in a company's prospects

(-) The fact that structural models are strongly influenced by share price volatility can lead to a vicious circle. This is because increased share price volatility can lead to higher expected default rates which in turn can lead to large scale selling of shares, which feed through to volatility of share prices and so on.

(-) Because the model results are sensitive to the current economic climate, the results can be volatile leading to over (under) reaction in the same way as the stock market

(-) The structural models rely on some simplifying assumptions which may not hold good. Some of

These assumptions are:

- [i] Frictionless markets without transaction costs and with liquidity
- [ii] A risk free rate of interest which is deterministic and always greater than zero
- [iii] Company's assets are observable and measurable

Reduced – Form Models

(+) These models are useful for investigating how default risk varies with the term of the liability/debt

(+) The reduced form models are particularly relevant for companies

- With no publicly –traded stocks
- No easily identifiable and measurable assets

(-) These models assume that the current credit rating of a debt completely determines the chances that it will default in the future. This assumption need not be true.

(-) Transition rates (and therefore default rates) vary considerably over the economic cycle. Hence it is a very difficult to build a long term model for predicting default rates over an entire economic cycle.

(-) Reduced form models are slow to adjust to changing environments because the credit ratings assigned to companies are updated with a lag

[7]

### **ANSWER 2(e )**

Operational Risk

Operational risk relates to losses arising from inadequate or failed internal processes, people and systems or from external events. Events such as technological failure, mismanagement, fraud and litigation give rise to operational risk

[1]

### **ANSWER 2(f)**

Difficulties in Assessing Operational Risk

- Operational risks are typically low probability events; hence it can be difficult to assess their likelihood of occurrence
- It can be difficult to assess and quantify the impact of an operational risk event - for example, quantifying the reputational damage which may be caused by an operational risk event
- There is often a lack of internal data on operational risks
- It may be difficult to obtain relevant external operational risk data against which internal results can be bench marked
- There can be a lack of expertise in assessing operational risk
- It is often difficult to determine the root cause of some types of operational risks

[2]

**ANSWER 2(g)**

Methodology for calculating Operational Risk Capital

- Assuming that the company has a reasonable historical loss data base, the company can use any one of the following three methods as part of the Advanced Measurement Approach [AMA] for measuring operational risk capital :
  - Internal Measurement Approach (IMA): Under this approach expected losses in each line of business are calculated by examining the average of the past losses experienced; and then multiplied up by a standard “gamma factor” to derive the capital requirement for the “worst case” losses.
  - Loss Distribution Approach [LDA]: This approach is similar to the VaR approach. This approach involves fitting a statistical distribution to the historical loss data and deriving the capital requirement from a confidence level on this distribution
  - Score Card Approach: Under this approach the capital requirement is determined by
    - Analysis of historical loss data using an approach similar to LDA or IMA to determine the basic capital requirement
    - Adjusting the capital requirement by quantitative indicators of future risks (e.g.: staff turnover) and by qualitative assessments of the company’s control environment

Other Approaches for Determining Operational Risk Capital

- Basic Indicator Approach  
Under this approach the company can hold capital equal to a set percentage (12%) of its total revenue or a set percentage [2.5%] of the total assets or a set percentage [5%] of its technical reserves in the context of an insurance company
- Standardised Approach  
This approach allows the percentages to be determined separately for each line of business

Evaluation of the Proposed Approach vis a vis Other Approaches

AMA has the advantages of

- Providing better sensitivity to the company’s actual experience
- Promoting improved risk management – the regulatory capital is often less, if companies choose this route
- Balancing flexibility with consistency
- The limitation of the AMA approach is that it requires a credible loss data base spanning a reasonable period in the past (e.g.: 5 years)

**ANSWER 2 (h)**

## Information Required for Assessing the Bank's Financial Position and Capital Adequacy

- Accounting Data  
The International Accounting Standards (IAS) advocates a fair value accounting approach particularly for the banking and insurance entities. So wherever possible accounting values on a fair value (market value) basis needs to be obtained
  - Accounting Methods and Accounting Practices  
There are three main areas where accounting information can be manipulated. These areas are
    - Lease Accounting
    - Accounting for Securitised Transactions
    - Consolidating Subsidiary Companies Accounts
  - Lease Accounting  
Leases can be accounted for by including both the asset and the liability on the balance sheet (e.g.: for financial leases) or by excluding them from the balance sheet (e.g.: for short term operating leases)  
If the bank is either leasing assets from a third party for its own use or extending "lease financing facility" to its customers then the method of accounting for such leases could be important  
Therefore a full list of all leases and the method of accounting for them is required
  - Securitisation  
Securitised assets can be removed from the balance sheet if they are bankruptcy- remote  
  
However in many cases although the securitised asset is removed there can be some residual exposures. This can result in hidden contingent liabilities  
Hence a full list of securitisations, outstanding risks and accounting methods is important
  - Consolidating Subsidiary Companies' Accounts  
There are instances where the subsidiaries are not fully consolidated in holding company accounts. Also the holding company may have provided a guarantee to pay the third party claims of subsidiary companies.  
If the bank has subsidiaries, then information is required on the "consolidation accounting" methods; and the legal liability on the part of the bank to pay the claims of the subsidiaries
- Other Accounting Information :  
This can include:
    - Depreciation Policy for the Fixed Assets
    - Amortisation policy for the intangible assets including goodwill on any acquisitions made by the bank in the past
    - Outstanding tax liabilities
    - Funding Position of Defined Employee Benefit Plans on a Recognised Valuation Basis

### Information on Off Balance Sheet Exposures :

The off balance sheet exposures for a bank can be quite diverse in nature and purpose such as:

- Firm Loan Commitments
- Standby Letters of Credit
- Financial Futures and Forwards
- Options
- Interest rate swaps and other derivative products

Information required on such off balance sheet exposures will include

- Nominal positions split by type of assets and currency
- Maturity profiles
- Market values by contract
- Net market values offsetting short and long positions
- Greeks of option positions like delta, gamma and Vega
- Risk models (e.g.: VaR model) used for estimating the economic capital for such risks
- Review of risk management practices through mechanisms like internal audit

- Assessing Compliance with Basel I

Information is required on

- ✓ Assets valued at accounting values classified by risk- weighting category (e.g.: cash, government securities, mortgages, corporate loans, etc)
- ✓ Capital at accounting values classified into Tier 1 and Tier 2
- ✓ Off balance sheet items categorised by
  - Interest rate products
  - Exchange rate products
 Classified further in terms of
  - Outstanding term
  - Original term
  - Market values
  - Credit conversion factors
- ✓ Nominal Values and the Maturity Profile of the
  - Long positions of the bank's assets in the banking book
  - Liabilities (deposits) in the banking book

This information is required to assess the net position by outstanding maturity and determine the additional charge under Basel I. The above information will have to be provided for each currency in which the bank operates

- ✓ Investment of trading book assets split by asset category in order to assess the likely market risk of the portfolio

- Assessing Compliance with Basel II

Information will be required on

- A list of assets held in the banking book split by credit rating
- Likely charge for operational risk, based on revenues or total assets held
- Internal models used for measuring credit risk and economic capital
- Bank's track record on risk management
- Volatility of reported profits

For the above question the maximum marks envisaged for each sub section is as follows:

- A. Accounting Data
- B. Accounting Methods and Practices- Leases, Securitisation  
And Consolidation
- C. Other Accounting Information
- D. Off Balance Sheet Exposures
- E. Compliance with Basel I
- F. Compliance with Basel II
- Total

[12]

### ANSWER 2(i)

Structuring the Securitised Board Issue

- Gamma Finance has a source of income in the future in the form of future rentals arising from the in force finance lease portfolio
- Gamma Finance can create a "pass through" vehicle [special purpose vehicle] assigning the right to receive all future rentals arising from this in force portfolio
- Having been given the right to all future lease rentals, this vehicle can sell bonds directly to investors based on the future rental income.
- Investors would pay an amount upfront similar to a debt issue and receive
  - A series of interest payments over the specified period
  - Redemption proceeds at the end of the specified period
- Alternatively, the bond issue can be of the "amortising" type whereby along with each coupon, the investor will receive a slice of the capital back

[5]

### ANSWER 2(j)

Evaluation of Securitised Bond Issue from the stand point of Gamma Finance

(-) Following the credit crisis in several markets, investors' appetite for securitisation has declined sharply. This is an issue which needs to be investigated

(+) Gamma Finance is not directly responsible for the servicing obligations associated with the bond. If the future lease rentals are insufficient (e.g.: due to some lessees defaulting on payments), then there is usually no recourse to Gamma Finance

(+) Such securitisations can be designed so that the interest and capital payments are well covered by the income stream, making them quite secured and high rated. They can therefore be issued quite cheaply

(-) There are more administration costs because of the complexity of the issue. It is important to quantify this prior to the issue. It is also necessary to appoint appropriate advisors with the relevant expertise in structuring such deals; and the advisory fees needs to be factored as part of the administration costs.

(-) if the lease agreements allow for prepayment, then investors could have the bond repaid earlier. This can be disadvantageous to the investors if interest rates fall and investors cannot find a new home for their funds. The investors may have to be compensated for this disadvantage by offering a slightly higher rate of interest than otherwise.

(-) the marketability of the bond may be poor and this can be a disincentive for institutional investors to participate in the issue. This problem can be addressed by

- Getting a credit rating for the bond
- Ensure that at least two market-makers guarantee to make prices in the bond for a period of time.

(-) if the credit quality of the lease portfolio is poor, then the issue is poorly covered by the lease rentals. This issue can be addressed by

- ✓ Issue of two or more tranches of bond, thus designing tranches of the bond that will appeal to different types of investor. The issues could be designed such that the lowest tranche of security begins to pay reduced coupons and capital as soon as the income from lease rentals is insufficient. Only when this tranche is fully defaulted does the next tranche begin to reduce payments. Investors that want high risk might choose the lowest tranche, and those that want security (and a lower return) and low risk might choose the highest tranche.
- ✓ Reduce the size of the issue and increase the collateralisation of the bond
- ✓ Reduce the size of the issue and amortise the debt more quickly
- ✓ Buy a third part guarantee, whereby a bank guarantees to make good any defaulted payments in the event that the income is insufficient
- (-)Gamma Finance will not have access to the income stream until the bond is paid off, thus reducing cash flow in future year and reducing the security of existing bondholders and other lenders. To address this problem it might be possible for Gamma Finance to arrange a borrowing facility with one or more banks to ensure that cash is always available. A revolving credit might be appropriate.

[12]

[Total Marks – 62]

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