

Institute of Actuaries of India

Subject CB1-Business Finance

November 2019 Examination

INDICATIVE SOLUTION

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.

<u>Solution 1:</u>	B	[2 Marks]
<u>Solution 2:</u>	C	[2 Marks]
<u>Solution 3:</u>	D	[2 Marks]
<u>Solution 4:</u>	C	[2 Marks]
<u>Solution 5:</u>	A	[2 Marks]
<u>Solution 6:</u>	C	[2 Marks]
<u>Solution 7:</u>	D	[2 Marks]
<u>Solution 8:</u>	A	[2 Marks]
<u>Solution 9:</u>	B	[2 Marks]
<u>Solution 10:</u>	B	[2 Marks]

Solution 11:

- LLP would limit the liability of the consultants as lenders would have a claim against the company's assets but not those of the individual partners.
- This benefit may be costly as lenders will perceive a higher risk. Higher Risk would lead to higher rate of interest and so lower profit.
- Lender may require additional security over assets
- Lender might even demand personal guarantees from the consultant partners. Partners will become liable for the loans despite LLP
- LLP are subject to a number of regulatory requirements that have to be set against the benefits of having an LLP
- For example, LLP are subject to some reporting and filing requirements that proprietorship firms are not
- LLP would involve sharing lot of information in the public domain. **[5 Marks]**

Solution 12:

- The shareholders is entitled for profits after interest and tax and are keen to see the company prosper. The lenders' objective is to get the agreed interest and repayments on time.
- The interests of both the parties are linked. If the company is not able to repay its lenders then the shareholders may lose everything. If the company is able to make a profit then it may be difficult to meet loan repayments.
- There is a difference in risks of both the parties, which could have an impact on the differences between the shareholders and the lenders.
- The shareholders have all the upside risks, whereas lenders do not have any real upside risks for lenders.
- Thus, lenders may have no financial incentive to encourage significant risk-taking on the part of the companies that they lend to. There may be situations when shareholders have low downside risk and this may lead to no payment which is a risk for the lenders.

[5 Marks]

Solution 13:

- Stock options give the employee/directors an incentive to work in an aligned way on improving the company's share price.
- The options will only have value to the employees/directors if the share price in the market exceeds the strike price when the options reach their maturity.
- This should have the effect of addressing the agency concerns that the shareholders might perceive. Maximising shareholder wealth would have the effect of enhancing the value of the stock options.
- If the company is issuing high number of options then the shareholders would risk the dilution of their equity when they are exercised.
This could make the options an expensive form of rewarding employees/directors. The cost and benefit need to be evaluated. **[5 Marks]**

Solution 14:

- A swap is a contract between two parties under which they agree to exchange a series of payments under a prearranged formula.
Normally, one party to the swap agreement is the bank (referred to as market maker) and the other is the company.
- The bank normally enters into many swap agreements. The parties involved in a swap are called counterparties.
- The swap will be priced so that the present value of cash flows is slightly negative for the investor and positive for the issuing organization.
- The difference represents the price that the investor is prepared to pay for the advantages brought by the swap on one hand, and the issuers expected profit margin on the other.
- Each counterparty to a swap has two kinds of risk:
 - Market Risk
 - Credit Risk
- Market risk - is the risk that market conditions will change so that the present value of the net outgo under the agreement increases. The market maker hedges the market risk by entering into an offsetting agreement.
- Credit risk - is the risk that the other counterparty will default on its payments. This will occur if the swap has a negative value to the defaulting party so that the risk is not the same as the risk that the counterparty would default on a loan of comparable maturity.

[5 Marks]

Solution 15:

Item	Gross profit	Cash flow
Property that the company possess has been revalued upwards by Rs 100 crores by the Valuer	No change	No change
There has been an interest payment of Rs 1000 crores towards Masala bond issued by the company	No change	Decreases
There has been an increase in inventory of Rs 500 crores which were manufactured out of raw materials available in the previous year end, ignoring any man power and production cost	No change	No change
There was a depreciation of plant and machinery to the extent of Rs 250 crores	Decreases	No change
It was decided to write off Rs 200 crores due to EHFL defaulting	No change	No change

[5 Marks]**Solution 16:** Different ways of manipulating accounts:

- Inappropriate depreciation of tangible assets
- Inappropriate amortisation of intangible assets
- Inappropriate valuation of inventories
- Inappropriate valuation of future liabilities
- Unwarranted revaluation of tangible assets
- Creating intangible assets of questionable true worth
- Omitting contingent liabilities
- 'pre booking' of anticipated sales revenues

[5 Marks]**Solution 17:** Technical account of insurers:

The statement of profit or loss for an insurance company is divided into *technical* and *non-technical* accounts.

In general, all items relating to the main insurance business are shown in the technical account.

This is divided further into separate accounts for general and long-term business [0.5]

Each revenue account will take the form:

Earned premiums (net of reinsurance)
 + Investment income
 + Realised capital gains
 - Claims incurred (net of reinsurance) or benefits payable
 - Net operating expenses incurred (including investment expenses)
 = Balance on revenue account [2]

Earned Premiums:

- Usually present in Non life insurance
- As per realisation concept – earning concept.
- Not all the policies are written at the beginning of the year. Hence logical to consider only the part of premium earned during the financial year

Investment income:

- Earned on investments held to cover insurance liabilities

Realised capital gains:

- Capital gains that have been realised during the year

Claims incurred (net of reinsurance) or benefits payable

- Accruals concept ; Either Paid claims + Change in outstanding claims or total benefits paid during the year

Net operating expenses incurred (including investment expenses)

- Expenses pertaining to the operations of the insurer – including commission, management expenses etc.,

[2.5]

[5 Marks]

Solution 18:

Annual demand = 2500 units

No of units per order = Q

Cost of ordering per order = $5+15 = 20$ [0.5]

Annual cost of holding per unit = $2+38 = 40$ [0.5]

Total cost = $2500/Q*20+40*(Q/2) = 50000/Q + 20Q$ [0.5]

Minimising cost with respect to Q = $d/ dQ (\text{Total cost}) = -50000/Q^2 + 20 = 0$ [1]

$Q^2 = 2500$

Q = 50 units per order [0.5]

No of orders = $2500/50 = 50$ orders per annum [0.5]

Assumptions:

- Annual demand is certain and uniform
- Lead times and delivery times are zero
- No bulk buying discounts

[1.5]

[5 Marks]

Solution 19: Trade receivables turnover period = Trade receivables / Sales on credit * 365 = 292

Given that Sales on Credit = 2500 crores

Trade receivables = 2000 crores [1]

Payable turnover period = Trade payables/ Credit purchase * 365 = 486.6667

Trade payable/ 750 * 365 = 486.6667

Trade payable = 1000 crores [1]

Cost of sales calculation:

Purchase of raw material = 1000 crores

Increase in inventory = 500 crores

Production cost = 1500 crores

Depreciation during the year = $(33000-0)/33 + (11000-0)/22 = 1500$

Total cost of sales = $1000+500+1500+1500 = 4500$ crores [2]

Profit margin = Operating profit / Revenue from sales = 21%

Operating profit / 15000 = 21%

Operating profit = 3150 crores [1]

Inventory Turnover period = Inventory/ Cost of sales * 365 = 108.6889

Inventory = 1340 crores [1]

Current ratio = Current Assets / Current Liabilities = 2.70829

Quick ratio = (Current Assets – Inventory)/ Current Liabilities = 2.03217

Solving these 2 ratios, with inventory being 1340 crores, Current Assets = 5367.5

Current Liabilities = 1981.875 crores [2]

Split of current assets:

- Inventory = 1340 crores
- Trade receivables = 2000 crores
- Other current asset = 2027.5 crores [1]

Split of current Liabilities:

- Trade payable = 1000 crores
- Other payables (Which includes Tax and Dividend payable, other payable)= 981.875 crores [1]

Fixed asset calculation:

At the end of year, Cost of plant after depreciation = 30000 crores

Cost of machinery after depreciation = 10000 crores. [1]

Partial P&L:

Revenue from Sales = 15000 crores (Given)

Cost of sales = (4500) crores

Gross Profit = 10500 crores

Admin & Distribution cost = (7350) crores (as computed, as Gross profit – Admin & Distribution cost = Operating profit) [0.5]

Operating profit = 3150 crores (as computed above)

Other calculations:

ROCE = Operating profit / (Equity + Long term debt) = 7.02% = 3150/ (Equity + Long term debt)

Long term Debt/ Equity = 0.32462

Solving these two equations, Equity = 33885.63 crores

Long term debt = 11000 crores

Equity composition:

Share capital = $2500 * 10 = 25000$ crores [2]

Debenture redemption reserve= To be found

Retained earnings = To be found

Others (Share premium etc)= To be found

Asset cover:

Asset cover for 9.75% 10 years Non convertible Debenture = 43.386

$(\text{Total assets} - \text{Current Liability} - \text{Intangible asset}) / (9.75\% \text{ 10 years NCD book value}) = 43.386$

$(\text{Fixed asset} + \text{Current assets} - \text{Current Liability}) / (9.75\% \text{ 10 years NCD book value}) = 43.386$

9.75% NCD Debenture = 1000 crores

Asset cover for 10.5% 5 years Unsecured loan = $(\text{Total assets} - \text{current Liability} - \text{Intangible asset}) / (9.75\% \text{ 10 year NCD} + 10.5\% \text{ 5 years Unsecured Loan}) = 7.23094$

10.5% 5 years Unsecured loan = 5000 crores

Asset cover for 12% 5 years Subordinated loan = $(\text{Total assets} - \text{current Liability} - \text{Intangible asset}) / (9.75\% \text{ 10 year NCD} + 10.5\% \text{ 5 years Unsecured Loan} + 12\% \text{ 5 years Subordinated Loan}) = 3.94415$

12% 5 years Subordinated Loan = 5000 crores

[3]

Also Total interest paid during the year = $9.75\% * 1000 + 10.5\% * 5000 + 12\% * 5000 = 1222.5$ crores

[0.5]

Total debt = 11000 crores

Continuation of P&L:

Operating profit	3150 crores
Interest paid	(1222.5) crores
Profit before tax	1927.5 crores
Tax	$(0.25 * 1927.5) = (481.875)$ crores
Profit after tax	1445.63 crores
Dividend	$2500 * 0.1 = 250$ crores
Profit to be carried to Balance Sheet	1195.63 crores

Balance sheet Items:

Debenture Redemption reserve = $0.25 * 1000 = 250$ crores

Retained earnings = $1195.63 + 2440 = 3636$ crores

Other reserves and capital = 5000 crores [1.5]

Balance sheet:

Liability :

Equity:

Share Capital = 25000 crore

Retained earnings = 3636 crores

Debenture redemption reserve = 250 crores

Other reserve and capital = 5000 crores

Debt:

NCD = 1000 crores

Unsecured loan (10%) = 5000 crores

Subordinated Loan (12%) = 5000 crores

Current Liabilities:

Trade payable = 1000 crores

Tax payable = 482 crores

Dividend payable = 250 crores

Other payable = 250 crores

Total Equity & Liability = 46868 crores

Assets:

Fixed Assets:

Plant = 30000 crores

Machinery = 10000 crores

Current Assets:

Receivables = 2000 crores

Inventories = 1340 crores

Other current assets = 2028 crores

Intangibles = 1500 crores

Total assets = 46868 crores

[1.5]

[20 Marks]

Solution 20:

i)

- Market capitalisation of a company depends on future expected cash flows, discounted to take account of the time value of money and risk.
- Accepting project with positive NPV has the effect of creating the expectation of additional future cash flows and these have already been adjusted for the cost of capital.
- The stock market has an incentive to factor in information about future cash flows as effectively and as quickly as possible.
- Market players who can identify future gains before their competitors can buy before the market price catches up with any new disclosures.
- When it does the share price will rise and they will have a capital gain. [5]

ii)

- The NPV decision rule requires management to consider proposals on the basis of their effect on shareholder wealth. If management make correct decisions then shareholders' wealth will increase, as reflected in market capitalisation. [1]
- It is highly unlikely that the directors' disclosures would enable the stock market to calculate the NPV accurately. Apart from anything else, this would lead to the publication of commercially sensitive information. [1]
- Market participants do not actually value shares on the basis of formal NPV calculations. Share prices are set by a process of supply and demand, with most participants taking note of the buying and selling decisions of other participants. The relationship between future cash flows and share prices is sound, but it is more of a long-term benchmark for prices than a measure that can be reported and valued on a day to day basis. The markets might even take the view that companies will invest in positive NPV projects as a matter of course and so share prices might reflect the possibility of such announcements, even though they have yet to be made. [2]
- The markets may not wholly agree with the directors' opinion of a project. The directors might be deemed to have an incentive to claim optimism that is subsequently shown to be unfounded. [1]

iii)

- Publishing information enables the directors to signal that their leadership of the company is sound and that the shareholders should not be concerned.
- Companies are often keen to keep shareholders informed in order to distinguish themselves from less efficient businesses. Without information, shareholders have no way of distinguishing well run companies with poor prospects from those that are better.
- Voluntary disclosures should enhance the share price and reduce the risk of a takeover bid motivated by the possibility that the shares are undervalued [3]

iv)

- Asymmetric information, also known as "information failure," occurs when one party to an economic transaction possesses greater material knowledge than the other party. ... Almost all economic transactions involve information asymmetries [1]

- Asymmetric information can lead to either moral hazard or adverse selection. Moral hazard occurs when a party will take a risk because the cost of the risk won't be felt by that party. Adverse selection occurs when undesired results happen because buyers and sellers have access to different information [2]
- [16 Marks]**

Solution 21:

- i) Sales – Costs = EBIT = 2500-1500 = 1000 [0.5]
Less Taxes (40% Of 500) = 400 [0.5]
NOPAT = 600 [1]
- ii) PV of Inflow $600/1.2 = 500$ [1]
NPV = PV of Outflow – PV of Inflow
Give 1 mark if the the candidate has calculated PV of Inflow.
- iii) NPV will go up [1]
- [4 Marks]**
