

# **Institute of Actuaries of India**

## **Subject CB1-Business Finance**

### **September 2021 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.

**Solution 1:** Option b. The company has increased the credit period to its customers during this period

[2 Marks]

**Solution 2:**

Option b. RS 79 cr

Profit in 2021 - 2022 = 10 cr \* 1.1 = 11 cr

[0.5]

Profit in future years:

2022 – 2023 = 12.10

2023 – 2024 = 13.31

2024 – 2025 = 14.64

[0.5]

Terminal value as at March 2025 = 50 cr

Value as at March 22 =  $12.10 / (1.05) + 13.31 / (1.05^2) + 14.64 / (1.05^3) + 50 / (1.05^3)$   
= 79 cr

[1]

[2 Marks]

**Solution 3:** Option d. Mr. X has a private limited company

[2 Marks]

**Solution 4:** Option c. Cybersecurity risk arising from ransomware attacks

[2 Marks]

**Solution 5:** Option d. Dividend paid

[2 Marks]

**Solution 6:** Option a. LIFO

[2 Marks]

**Solution 7:** Option b. Mr. A RS 10,833 and Mr. B RS 4,333

Original value of share = 100

Revised value of share =  $1/3 * 60 + 2/3 * 100 = 86.67$

[1]

**Mr. A**

Value of current holding =  $100 * 100 = 10,000$

No. of additional shares received via Rights issue =  $(100 * 50\%) / 2 = 25$

Value of share after holding =  $(100 + 25) * 87 = 10,833$

[0.5]

**Mr. B**

Value of current holding =  $50 * 100 = 5,000$

No. of additional shares received via Rights issue =  $(50 * 0\%) / 2 = 0$

Value of share after holding =  $(50 + 0) * 87 = 4,333$

[0.5]

[2 Marks]

**Solution 8:** Option d. Negative Goodwill

[2 Marks]

**Solution 9:** Option a. Higher integrity

[2 Marks]

**Solution 10:** Option e. Beyond Budgeting

[2 Marks]

**Solution 11:**

- i) Accruals or realization [ $\frac{1}{2}$  mark], definition [ $\frac{1}{2}$  mark], justification [ $\frac{1}{2}$  mark] [1.5]
- ii) Consistency [ $\frac{1}{2}$  mark], definition of consistency [ $\frac{1}{2}$  mark], justification [ $\frac{1}{2}$  mark] [1.5]
- iii) No violation, principle of materiality has been applied [1 mark], definition of materiality [ $\frac{1}{2}$  mark], justification [ $\frac{1}{2}$  mark] [2]  
[5 Marks]

**Solution 12:**

Crowdfunding enables a large number of participants support a business, project, campaign or an individual, where participants decide the amount they wish to contribute to fund a particular venture. [1]

**Advantages**

- Unstructured form of raising capital, hence lower compliances
- Helps when traditional methods of raising capital fail
- Allows to reach out to a large number of participants
- Provides flexibility for amount of contribution made and hence attracts small investors too
- Requires lower amount of expertise to execute
- Has lower associated cost as it can be launched via social media sites

[0.5 marks for every valid point, Max 2]

**Disadvantages**

- Not regulated by any government body in India, hence higher risks
- Higher risk involved for investor, increasing cost of raising capital
- Marketing cost involved is typically higher
- Managing a large number of investors may be operationally challenging
- As it is a newer concept in India, raising higher amounts may not be possible
- Dependency on external platform may results into operational or credit risks like default of payment transfer or shut down of platform during campaign
- Tax laws applicable will be complicated to adhere to
- People may assume this would entail shareholding even when it is not investment based crowdfunding

[0.5 marks for every valid point, Max 2]

[5 Marks]

**Solution 13:**

Advice of the consulting actuary should cover:

- Arranging for additional capital to fund higher volume of raw material and production cost
- Lesser profits while money is reinvested in business
- Higher operational problems due to increased staff and manufacturing scale like bigger factory space etc.
- Lack of management expertise
- Government policy on monopoly power and mergers
- Lack of diversification benefits
- Larger scale may attract competitor's attention

- Seasonality of business may not lead to continued profits
- Higher level of compliances like labor laws etc. may now be applicable
- Higher level of income may be subject to higher tax rates, in turn reducing net profit

[1 marks for every valid point, Max 5 Marks]

**Solution 14:**

- Inventory overvaluation (eg: shifting from FIFO to LIFO for falling prices of items)
- Capitalizing of revenue expenses
- Adding liability as an off-balance sheet item
- Not recognizing & provisioning for bad debts
- Delaying expenses to next financial year
- Treating pre-payments as income
- Using optimistic estimates for defined benefit liabilities
- Ignoring losses arising from foreign exchange translation
- Synthetic leases, where the company leases out an asset to itself
- Changing method of calculating depreciation
- Related party circular transactions that are overstated

[½ mark for each relevant point]

[5 Marks]

**Solution 15:**

$$\text{WACC} = (\text{Equity capital}/\text{Total capital}) * \text{Cost of equity} + (\text{Debt capital}/\text{Total capital}) * \text{net cost of debt} \quad [0.5]$$

$$\text{Cost of equity} = \text{risk free rate} + \text{geared beta} * \text{equity risk premium} \quad [0.5]$$

$$\text{i.e. } 8\% = 66.67\% * (\text{risk free rate} + 1.5 * 6\%) + 33.33\% * 3\% \quad [1]$$

$$\text{i.e. risk free rate} = (8\% - 1\%) / 66.67\% - 9\% = 1.5\% \quad [0.5]$$

$$\text{Geared Beta} = \text{ungeared beta} * [1 + \text{debt to equity ratio} * (1 - \text{tax rate})]$$

$$\text{i.e. ungeared beta} = 1.5 / [1 + 50\%] = 1 \quad [1]$$

*Note: In absence of tax rate mentioned in the QP, tax has been considered as 0 for calculation of revised geared beta. However, if any candidate has assumed a particular tax rate and mentioned it explicitly, full marks to be awarded based on their calculations. In such a case final answer value may not match with model solution.*

If additional debt is provided,

$$\text{Revised geared beta} = 1 * [1 + 100\%] = 2 \quad [0.5]$$

*Please refer note above for tax implications*

$$\text{Revised WACC} = 50\% * (1.5\% + 2 * 6\%) + 50\% * 3\% = 8.25\% \quad [0.5]$$

Considering cost of capital is increasing, additional debt should not be used [1]

[5 Marks]

**Solution 16:**

Advice should include:

- Opportunity cost – compare benefits of releasing dividends vs retained earnings
- Competition – if other competitors are not releasing dividends, shareholders may not be expecting a high return
- Cash reserves – how will the dividends get funded
- Tax – if current capital gains tax is higher than average income tax rates, then releasing dividends may be better
- Stability and consistency of results – investors like stability of returns rather volatility

[1 mark per valid point, Max 5 Marks]

**Solution 17:**

- i) The comparison of the opening and closing balances can reveal a net cash inflow or outflow, but cannot show the reasons for that change.
- ii) A cash flow statement provides the reader with details of the extent to which the operating activities are generating (or consuming) cash.
- iii) The cash flow statement also shows the other cash flows, broken down into relevant categories. Thus, the cash flow statement can highlight the fact that a net cash inflow occurred because the company has raised fresh borrowings.
- iv) The statement can also show how that cash inflow was applied.
- v) The cash flow statement makes it easier to reveal whether the net movement was attributable to the working out of a business strategy (e.g. the deliberate investment of surplus cash) or the first sign of a problem (e.g. cash flow problems).

[1 mark for each distinct point elaborating the advantages of cash flow statement]

[5 Marks]

**Solution 18:****Advantages:**

- The balance sheet will better reflect the underlying worth of the company's assets
- This will enable shareholders to have a better appreciation of management's stewardship (because there is a more realistic measure of the value of the assets entrusted to them)
- Lenders will have a better understanding of the value of assets being pledged as collateral.
- It fits in with more recent emphasis on 'fair value'.

**Disadvantages:**

- Valuations will always be more subjective than stating figures at cost less depreciation.
- Additional cost would have to be incurred to value property on a mark to market basis every year
- There will be costs, such as valuers' fees, associated with showing valuations
- Values are likely to be more volatile than cost less depreciation and the associated fluctuations might make the business appear more risky
- It would deviate focus of the company from operations into managing real estate value
- The stewardship of management will be over-estimated because of the increase in value of the company due to increase in property value would not have happened due to skilled decision making of the management

[0.5 mark for each point. Max 3 marks for advantages and 3 marks for disadvantages. Any other relevant point accepted]

[5 Marks]

**Solution 19:**

i)

**Computation of Sales** [2]

Trade Receivables = 20000, Debtor Turnover Days = 45.625

Debtor Turnover Ratio =  $365/45.625 = 8$  times

Credit Sales =  $8 * 20,000 = 160,000$

Cash Sales = 20% of Total Sales =  $160,000 * .2 / .8 = 40,000$

Total Sales = Credit Sales + Cash Sales = 200,000

**Computation of Purchases** [1]

Payable Turnover =  $365/\text{Supplier Turnover Days} = 365/91.25 = 4$  times

Purchases = Payable Turnover \* Trade Payables =  $4 * 30,000 = 120,000$

**Gross Profit** [1]

Gross profit margin = Total Sales / Cost of Sales  $\Rightarrow$  Cost of Sales =  $200,000 * .25 = 50,000$

**Delta Stock** [1]

Gross Profit = Sales - Cost of Sales = Sales - (Purchases + Wages & Allowances + Op.Stock - Cl.Stock)

Op.Stock - Cl.Stock =  $50,000 - [200,000 - (120,000 + 20,000)] = -10,000$

**Debt Value & Net Worth** [2]

Asset Utilization Ratio = Revenue / (Equity + Reserves + Long Term Debt)

Equity + Reserves + Long Term Debt =  $200,000 / (400/393) = 196,500$

Debt/Equity Ratio = Debt / (Equity + Reserves)  $\Rightarrow$  (Equity+Reserve) = Debt/1.45625

**$1.45625 * \text{Equity} + \text{Equity} = 196,500 \Rightarrow \text{Equity} = 80,000$**

**Equity = 80,000, & Debt =  $80,000 * 1.45625 = 116,500$**

**Interest on Debt** [1]

**$116,500 * .1 = 11,650$**

**Depreciation** [2]

Plant:  $(100,000 - 10,000 + 20,000) * .1 = 11,000$ .

Building =  $50,000 * .05 = 2,500$ .

**Listing of EBITDA, EBIT, PBT and PAT** [2]

Gross Profit Margin = Rs.50,000

EBITDA = GP - carriage outward@4% of sales - marketing expenses@3% of sales - staff salaries + profit on sale of machinery =  $50,000 - 8,000 - 6,000 - 10,000 + 2,000 = 28,000$

EBIT = EBITDA - Depreciation@13,500 = 14,500

PBT = EBIT - Interest@11,650 = 2850

PAT =  $2850 * (1 - .15) = 2422.5$

**Tax Provisions** [1]

Accumulated Tax = 9,025  
 New Tax = 427.5  
 Total Tax Due = 9025 + 427.5 = 9452.5

**Closing Inventory**

[1]

Current Liability = Tax Provision + Payables = 9452.5 + 30,000 = 39,452.5  
 Quick Assets = Quick Ratio \* CL = .75\*39,452.5 = 29,589.375  
 Current Assets = Current Ratio \* CL = 1.25\*39,452.5 = 49,315.625  
 Closing Inventory = Current Assets - Quick Assets = 19,726.25

**Bank Balance**

[1]

Current Assets = Bank + Trade Debtors + Inventory  
 Bank = 49,315.625 – 20,000 – 19,726.25 = 9,589.375

**Correct value of building & machinery**

[1]

Closing value of plant & machinery = 99,000  
 Closing Value of Building = 47,500

**Accumulated Profit Reserve**

[1]

EPS = PAT/No of Shares => No of Shares = 2422.5/1.105 ~ 2307.15  
 Equity Issued @ FC of 10 = 2307.15\*10 = 23,071.5  
 Accumulated Reserves = Net Worth – Equity Issued = 80,000 – 23,071.5 = 56928.5

**Final Balance Sheet: [1 marks]**

Liability Side: (Equity Issued@23,071.5 + Accumulated Reserves@56928.5) + Long Term Debt@116,500 + (Tax Provisions@9452.5 + Trade Payables@30,000) = 235,952.5

Asset Side: (Land@40,000 + Plant & Machinery@99,000 + Building@47,500) + (Bank@9,589.375+ Debtor@20,000 + Closing Stock@19,726.25) + Investments/Other non current/non fixed asset@136.875 (balancing figure) = 235,952.5

→ Interest coverage ratio incorrectly stated as 1.8125 instead of 1.244635. Marks should be awarded if someone has done calculations using this number.

[2]

[18]

**ii) Breakeven Sale:**

Total Fixed Expenses = (Staff Salaries + Interest + Depreciation) = 31,500 [0.5]

Variable Margin = Gross Margin - Carriage Outward % - Marketing Expenses % = 19% [0.5]

Breakeven Sales = Total Fixed Expenses / Variable Margin = 31,500/.19 = 165,789.47 [1]

[2]

[20 Marks]

**Solution 20:**

i)

Year	Capacity	Matches #	Occupancy	Price per ticket	Total revenue	Profit
6 <sup>th</sup>	500	40	=50% * 100% + 50% * 20% = 60%	500	60,00,000	=60,00,000 -20,00,000 (cost) =40,00,000
7 <sup>th</sup>	500	40	60%	500	60,00,000	40,00,000
8 <sup>th</sup>	500	40	60%	500	60,00,000	40,00,000
9 <sup>th</sup>	500	40	60%	500*1.1 = 550	66,00,000	46,00,000
10 <sup>th</sup>	500	40	60%	550	66,00,000	46,00,000

Total Revenue = Capacity \* Matches # \* Occupancy \* Price per ticket  
 Cost = Revenue in 5<sup>th</sup> year – Profit in 5<sup>th</sup> year

[1 mark for each correct column, Max 5]

NPV = Profit year 6 / (1 + discount rate) + Profit year 7 / (1 + discount rate) ^2 + Profit year 8 / (1 + discount rate) ^3 + Profit year 9 / (1 + discount rate) ^4 + Profit year 10 / (1 + discount rate) ^5

NPV = 1.83 cr, The calculation done by the intern is correct [2]  
[7]

- ii) NPV is not the best statistic [1]  
 Discounted Payback period should be more appropriate [1]  
 Because the complaint of investors is that even though there is profit, they were promised a pay back in 10 years which now seems to be longer [1]  
 [3]
- iii) If all earlier profits were used to pay back the investors, discounted money paid back = 1.73 cr  
 Hence, money to be paid back = 4cr – 1.73cr = 2.27cr [1]

From table in section a above, discounted payback period is time required to generate 2.27cr additional profit

Future years	Total Profit	Present Value
1	40,00,000	29,84,861
2	40,00,000	28,42,725
3	40,00,000	27,07,357
4	46,00,000	29,65,201
5	46,00,000	28,24,000
6	46,00,000	26,89,524
7	52,60,000	29,28,964
8	52,60,000	27,89,490

[3 marks for adding year 6,7 &amp;8 and 1 mark for cumulating all present values]

So discounted payback period will be 8 more years from today or 13 years in total

[1]  
[6]



- iv)** No, the project was not successful as discounted payback period is higher than 10 years pay back originally promised [0.5 mark for answer and 0.5 mark for reason]
- v)** Currently in next year 2 years, discounted profit will be RS 58 lac i.e. discounted revenue of 58 + 29 = RS 87 lac [1]  
Required discounted profit is 2.27 cr i.e. discounted revenue of RS 2.56 cr [1]  
So increase in ticket price will be  $2.56/0.87 = 2.93$  times [1]  
**[3]**

**[20 Marks]**

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