

Institute of Actuaries of India

Subject CT2 – Finance and Financial Reporting

May 2014 Examinations

INDICATIVE SOLUTIONS

Solution 1 :

Answer D) All the above

[2 Marks]**Solution 2 :**

Answer: D) Option c)

[2 Marks]**Solution 3 :**

Answer D) Option b) and c)

[2 Marks]**Solution 4 :**

Answer B) Option a) and b)

[2 Marks]**Solution 5 :**

Answer B) Option a) and b)

[2 Marks]**Solution 6 :**

Answer C) Option a), c) and d)

[2 Marks]**Solution 7 :**

Answer A) Option a) is Investment Decision and Option b) is Finance Decision

[2 Marks]**Solution 8 :**

Answer A) Option a) only

[2 Marks]**Solution 9 :****Answer – C 13.70%**Bid Price on Bid Pricing Basis is Rs. $9,850,000 / 50000$ units = Rs. 197.00Offer Price on Bid Pricing Basis is Rs. $197 / (1 - 8\%) =$ Rs. 214.13Bid Price on Offer Pricing Basis is Rs. $10,500,000 / 50000$ units = Rs. 210.00Offer Price on Offer Pricing Basis is Rs. $210 / (1 - 8\%) =$ Rs. 228.26

	Bid Price	Offer Price
Bid Pricing Basis	Rs. 197.00	Rs. 214.13
Offer Pricing Basis	Rs. 210.00	Rs. 228.26

Someone who buys units (offer price) when the trust is expanding (offer pricing) and later sells units (bid price) when the trust is contracting (bid pricing) will suffer an effective spread of 13.7%. $((228.26 - 197) / 228.26)$

[2 Marks]

Solution 10 :**Answer – D -1.46%**

Bid Price on Bid Pricing Basis is Rs. 145,000/ 2000 units = Rs. 72.50

Offer Price on Bid Pricing Basis is Rs. 72.50 / (1 – 6%) = Rs. 77.128

Bid Price on Offer Pricing Basis is Rs. 152,000/ 2000 units = Rs. 76.00

Offer Price on Offer Pricing Basis is Rs. 76 / (1 – 6%) = Rs. 80.851

	Bid Price	Offer Price
Bid Pricing Basis	Rs. 72.50	Rs. 77.13
Offer Pricing Basis	Rs. 76.00	Rs. 80.85

Someone who buys units (offer price) when the trust is contracting (bid pricing) and later sells units (bid price) when the trust is expanding again (offer pricing) will suffer an effective spread of only 1.46%. $((77.13 - 76) / 77.13)$

[2 Marks]

Solution 11 :**i. a)**

Current Ratio:

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

UTILITY:

- 1) To assess whether the company will be able to pay its bills over the next few months. It provides a comparison of an estimate of the amount of money due to be received in the short term with an estimate of the amount of money to be paid over the same period.

[2 Marks]

b) Debtors turnover period

$$\text{Debtors Turnover period} = \frac{\text{debtors (trade receivables)}}{\text{credit sales}} \times 365$$

UTILITY:

- 1) This is a measure of the average length of time taken for debtors (trade receivables) to settle their balance. It is desirable for this period to be as short as possible.

[2 Marks]

ii.

The finance manager should track the quick ratio

$$\text{Quick ratio} = \frac{\text{current assets} - \text{inventories (stocks)}}{\text{Current Liabilities}}$$

[1 Mark]

[Total Marks – 5]

Solution 12 :

i)

Major types of business entities

- Sole Trader
- Hindu Undivided Family
- Partnership Firm
- Limited Liability Partnership
- Limited Company (Public or Private)

	Ownership	Liability	Legal Status
Sole Trader	Individual	Unlimited	Not Separate
Hindu Undivided Family	Members by virtue of birth in family	Unlimited	Separate
Partnership Firm	Partners	Unlimited	Not Separate
Limited Liability Partnership	Members	Limited	Separate
Limited Company (Public or Private)	Shareholders	Limited	Separate

[4 Marks]

ii)

The best form from the point of view of minimizing the tax amount would be a Sole Trader.

Reasons

- There is an exemption limit from tax depending on the age and gender of the Sole Trader. No such exemption limit for limited company.

- Lower marginal rates of income tax are applicable for lower levels of income above the exemption limit for Sole Trader. No such lower marginal rates for limited company.
- Sole Trader can claim tax exemptions applicable to an individual which are not applicable to limited company.

[2 Marks]

iii)

Answer B) Workings

	Option C	Option B
Profit before tax yr 1	100000	100000
Profit after corporation tax	50000	50000
Dividend Distribution Tax	-10000	
Rate of return (Pre tax)		15.0%
Rate of return (Post tax)	7.25%	
Profit before tax yr 2		7500
Profit after tax	2900	3750
Notional Dividend Distribution Tax (since funds still held by company)		-750
Returns for yr 2	2900	3000

Options D will be in between the extremes B & C and would not be suitable.

Conclusion: Do not distribute any dividend

[2 Marks]

[Total Marks-8]

Solution 13 : i)Income statement of MAB Ltd for the year ended on 31st March 2014.

Particulars	INR			Marks
	Amount (In Millions)	Amount (In Millions)	Amount (In Millions)	
Revenue			10,112.50	
Sales	10,250.00			
(Less)Returns inward	-125.00			
(Less) Free sample	-12.50	10,112.50		1 for Free Sample
(Add) Loss by fire			5.00	1
			10,117.50	
Cost of sales			8,098.00	
Opening stock		970.00		
Purchases		5,540.00		
Balance given	5600.00			
(Less) Returns outward	-50.00			
(Less) Free sample	-10.00			0.5
Closing stock		1,315.00		
Cost of goods sold		5,195.00		
Wages		1,700.00		
Octroi		5.00		
Power and fuel		1,060.00		
Depreciation on Factory building		12.50		
Depreciation on Plant and machinery		115.50		
Freight inward		10.00		
Gross profit			2,019.50	1
Distribution costs			570.00	
Advertising and marketing expenses	560.00			
(Add) Free sample	10.00	570.00		1 for Free Sample
Administrative expenses			847.00	

Salaries		365.00		
Depreciation of Motor vehicles		12.00		
Auditor's fees		5.00		
Legal consultancy charges		5.00		
Printing and stationery		5.00		
Administrative expenses		230.00		
Insurance		45.00		
Directors' remuneration		180.00		
Provision for doubtful debts			219.38	
Loss by fire			1.00	0.5
Operating Profit			382.12	
Finance costs			66.00	
Interest on loan		66.00		
Net profit before tax			316.12	1
Profit after tax in the absence on information on tax			316.12	

Assumption:

1) The accountant originally booked the free samples at the sales price

[12 Marks]

ii)

Statement of Financial position of MAB Ltd. as on 31st March 2013

INR

Particulars	Amount (In Millions)	Amount (In Millions)	Amount (In Millions)	Marks
ASSETS				
Non-current assets			1,090.00	
Land		150.00		0.5
Factory building	250.00			
(Less) Depreciation@ 5%	12.50	237.50		1 for final

				balance
Plant and machinery	770.00			
(Less) Depreciation @ 15%	115.50	654.50		1 for final balance
Motor vehicles	60.00			
(Less) Depreciation @ 20%	12.00	48.00		1 for final balance
Current assets			5,624.12	
Stock in trade		1,315.00		0.5
Trade receivables		4,168.12		0.5
Balance given	4,400.00			
(-) Free sample wrongly booked as sales	12.50			1
	4,387.50			
(-) Provision for doubtful debts @5% on 4387.50	219.38			1
Cash and bank balances		141.00		0.5
Total assets			6,714.12	
EQUITY AND LIABILITIES				
Share capital		1,000.00		0.5
				1 for final balance
Retained earnings		1,852.12		
Opening balance	1,536.00			
(Add) Current year's profits	316.12			
Total equity			2,852.12	
Non-current liabilities			662.00	0.5
Bank loan		662.00		
Current liabilities			3,200.00	0.5

Trade payables		3,200.00	
Total liabilities			3,862.00
Total equity and liabilities			6,714.12

[10 Marks]

[Total Marks-22]

Solution 14 :

i)

The easiest way to achieve a listing on London Stock Exchange without raising additional capital is by "Introductions".

Introductions does not involve the sale of any shares. It simply means that the existing shares will in future be quoted on the London Stock Exchange.

Pre-requisite for Introductions: 25% of shares must be in public hands, that is, the "free float" of shares available for purchase excluding strategic holdings in subsidiaries or cross-holdings must be at least 25% of the issued shares.

[2 Marks]

ii)

Benefits of underwriting a share issue

- 1) It helps to transfer the risk that the issue is not fully subscribed. If the issue is under-subscribed, the issuing house will buy the unsold shares.
- 2) However this service comes at a cost- the issuing house will charge a fee for the service
- 3) The issuing house also helps in pricing the issue accurately so that the risk of under-subscription is minimised but at the same time the issuing company raises maximum amount of capital for the given number of shares issued.
- 4) The issuing house provides valuable insights on the prevailing market and economic conditions which would help time the issue appropriately.
- 5) The issuing house also absorbs the risk of changes in market and economic conditions between agreeing to accept the underwriting and the closing date for the offer for sale.

[4 Marks]

iii)

a. A biotechnology research start-up

"Placings" or Selective marketing is the best method

The issuing house first buys the securities from the company and will then individually approach institutional investors such as pension funds, life offices and venture capitalists directly. The institutions will be offered securities, but no public applications are invited.

Reasons:

- a) The riskiness of the underlying business,
- b) Lack of public confidence and unwillingness of public to invest in ventures with lower success rates.
- c) Cheaper method as compared to offer for sale to public

[2 Marks]

b. An established, well reputed and profitable company

Alternative methods:

- a) Rights issue: It involves offering shares to the existing shareholders in proportion to their holdings.

Reasons:

The company can save a lot expenses as compared to offering shares to the public.

However the rights issue will have to be made (generally) at a discount to the prevailing price of shares and hence the company may lose on the capital raised by the exercise vis-a-vis other alternatives listed below

- b) Offer for subscription: The company sells shares directly to the public without underwriting the issue.

Reasons:

- Since the company has a strong reputation and track record, it can leverage this to save the underwriting fee.
- It may also send a positive signal to the public about the strength of the company.

- c) Placings: as it helps company save on cost of underwriting but will lead to concentration of shareholding in the hands of few investors. This differentiates it from alternative b) above.

[3.5 Marks]

c. A medium sized company which is unsure of its share value

Offer for sale by tender: The issuing house invites members of the public to submit a tender stating the number of shares which they are prepared to buy, and the price which they are prepared to pay.

After the offer closes, the issuing house will determine a single strike price. This may be the highest price at which all the stock can be allocated. However, a lower strike price will be chosen if this is necessary to ensure a sufficient spread of shareholders. All applicants who bid at least as much as the strike price will have their applications accepted.

All successful applicants will pay the strike price, regardless of how much more they had bid.

Reasons:

It helps the issuing company raise maximum capital even though it may be uncertain of the true value of its shares. It may know the range of the price but allows the market to determine the exact value.

[2 Marks]

d. Government owned company wherein Government is seeking to disinvest

Offer for sale at fixed price: a predetermined number of shares hitherto held by the Government are offered to the general public at a specified price via an issuing house.

Reason:

- The Government's agenda is generally not driven by the objective of maximising profits. It prefers that the share issue process is simple and there is widespread ownership of shares of the company.

[1.5 Marks]

[Total Marks-15]

Solution 15 :

Risk free return = yield on the central government bond

= IRR on the bond

By trial and error –

Trying at 8% - $100 \cdot v^{10} + 9 \cdot (1 - v^{10}) / i = 106.71$

Thus risk free rate can be taken as 8%

Calculation of beta for ABC Ltd.

Months	Rmj	Rij	Rmj – Rm	Rij - Ri	(Rmj - Rm)*(Rij - Ri)	(Rmj-Rm)^2
1	0.750%	4.360%	-0.083%	2.7%	-0.00222%	0.00007%
2	0.667%	1.000%	-0.167%	-0.7%	0.00116%	0.00028%
3	1.000%	4.000%	0.167%	2.3%	0.00384%	0.00028%
4	1.333%	4.000%	0.500%	2.3%	0.01152%	0.00250%
5	1.500%	-2.000%	0.667%	-3.7%	-0.02464%	0.00444%
6	0.583%	5.000%	-0.250%	3.3%	-0.00826%	0.00063%
7	0.833%	1.500%	0.000%	-0.2%	0.00000%	0.00000%
8	-0.417%	-4.000%	-1.250%	-5.7%	0.07121%	0.01563%
9	0.500%	1.000%	-0.333%	-0.7%	0.00232%	0.00111%
10	1.000%	2.000%	0.167%	0.3%	0.00051%	0.00028%
11	1.417%	2.000%	0.583%	0.3%	0.00177%	0.00340%
12	0.833%	1.500%	0.000%	-0.2%	0.00000%	0.00000%
	Rm	Ri			CoVar(i,m)	Var(m)
	0.833%	1.70%			0.00520%	0.00260%

Beta for ABC Ltd. = Co-variance (i,m) / Variance (m)

$$= 2$$

Market return rate = Average of Sensex return = Rm = 10%

Cost of capital = Risk free rate + Beta of equity X (Market return rate – risk free rate)

$$= R_f + B * (R_m - R_f)$$

$$= 8\% + 2 * (10\% - 8\%)$$

$$= 12\%$$

[12 Marks]

Solution 16 :

$$i = 12\%$$

$$i^{(12)} / 12 = 0.94888\%$$

Cost of Operating Lease

$$\text{NPV of payments} = \text{Monthly payment} \times (1 - v^n) / (i^{(12)} / 12)$$

$$= \text{Rs. } 22,47,732$$

$$\begin{aligned} \text{NPV of tax savings on deduction of rental payments} &= \text{Monthly payment} \times 12 \times (1 - v^n) / i \times 35\% \\ &= \text{Rs. } 7,46,489 \end{aligned}$$

(since the tax savings will be available only on year end even if the rental payments are monthly)

Cost of purchasing outright

NPV of purchase is Rs. 30,00,000

Schedule showing depreciation and WDV at end of each year

Year	Written Down Value	Depreciation
0	30,00,000	
1	25,50,000	4,50,000
2	21,67,500	3,82,500
3	18,42,375	3,25,125

$$\begin{aligned} \text{NPV of tax savings on depreciation} &= (450000/1.12 + 382500/1.12^2 + 325125/1.12^3) \times 35\% \\ &= \text{Rs. } 3,28,345 \end{aligned}$$

$$\begin{aligned} \text{NPV of capital loss on sale of car} &= (\text{Rs. } 18,42,375 - \text{Rs. } 15,00,000) / 1.12^3 \times 35\% \\ &= \text{Rs. } 85,294 \end{aligned}$$

$$\begin{aligned} \text{NPV of proceeds from sale of car} &= \text{Rs. } 15,00,000 / 1.12^3 \\ &= \text{Rs. } 10,67,670 \end{aligned}$$

Cost of purchasing on loan

Calculation of yearly installment for the loan repayment

$$\begin{aligned} \text{Loan amount} &= \text{Purchase price} - \text{down payment} \\ &= \text{Rs. } 27,00,000 \end{aligned}$$

$$\begin{aligned} \text{Yearly installment} &= \text{Rs. } 27,00,000 / ((1 - v^n) / i) \text{ where } i = 18\% \\ &= \text{Rs. } 12,41,794 \end{aligned}$$

Schedule showing loan repayment schedule

End of Year	Loan Repayment	Interest Payments	Principal Payments	Balance o/s
-				27,00,000
1	12,41,794	4,86,000	7,55,794	19,44,206
2	12,41,794	3,49,957	8,91,837	10,52,368
3	12,41,794	1,89,426	10,52,368	-

NPV of payments = Downpayment + NPV of installments

$$= \text{Rs. } 300000 + \text{Rs. } 12,41,794 \times ((1 - v^n)/i) \text{ where } i = 12\%$$

$$= \text{Rs. } 32,82,581$$

NPV of tax savings on interest paid = $(486000/1.12 + 349957/1.12^2 + 189426/1.12^3) \times 35\%$

$$= \text{Rs. } 2,96,710$$

Schedule showing summary of costs for each option

Options	Loan	Purchase	Lease
NPV of payments	32,82,581	30,00,000	22,47,732
NPV of Depreciation Tax Benefit	3,28,345	3,28,345	-
NPV of Interest Tax Benefit	2,96,710	-	-
NPV on 52 Rental Tax Benefit	-	-	7,46,489
NPV of benefits	6,25,055	3,28,345	7,46,489
NPV of Total cashflow	26,57,525	26,71,655	15,01,243
Residual Value on sale	10,67,670	10,67,670	-
Capital Loss Benefit	85,294	85,294	-
Total Cost of Option	15,04,562	15,18,691	15,01,243

Operating Lease is the best option.

[18 Marks]
