Institute of Actuaries of India

Subject CT2 – Finance and Financial Reporting

May 2015 Examinations

INDICATIVE SOLUTIONS

Solution 1: **B** **[2]**

Solution 2: **B** **[2]**

Solution 3: **C** **[2]**

Solution 4: **C** **[2]**

Solution 5: **C** **[2]**

Solution 6: **A** **[2]**

Solution 7: **B** **[2]**

Solution 8: **A** **[2]**

Solution 9: **A** **[2]**

Solution 10: **B** **[2]**

Solution 11:

i) Factors to be considered:

- Whether the cash used for paying a dividend could help to partially fund the new assets and thereby reduce the interest burden in the future. If the cash saved by not paying the dividend is miniscule as compared to the cost of the new asset, paying the dividend may seem preferable.
- Whether the small dividend will significantly change the shareholders' perception about the company. Shareholders may not value the small dividend and may rather feel that the same cash could have been put to better use.
- Whether the new assets to be purchased will immediately turn around the fortunes of the company and start generating cash. If the new assets are expected to have a long gestation period, it would be wise to avoid any dividend and use the cash for survival in the interim.
- Whether the shareholders would expect such dividends in the future even if the company continues to make losses. It would be better to avoid setting any expectations which won't be met in the future. If the company makes it clear to its shareholders that the dividend is one-off and future dividends will entirely depend on company's profitability, it would be acceptable to pay dividends.
- Whether the terms on which the providers of finance for new assets remain unchanged after paying the dividend. A cash outflow (in the form of dividends) may be seen as detrimental to the survival of the company and the lenders may hike the interest rate and make the other terms and conditions more onerous. In an extreme situation, they may even refuse to lend money. **[3]**

ii)

Alternative way of rewarding shareholders

Scrip Issue i.e offering additional shares to the existing shareholders free of cost.

Benefits: It ensures that there is no immediate cash outflow from the company. The same cash could be used to partially fund the new assets which would in turn help to reduce the debt and interest burden. **[2]**

[5 Marks]

Solution 12:

i)

- Written agreements between the various classes of stakeholder may specify key aspects of the relationship between them, but cannot realistically cover all possible future eventualities. Such agreements therefore need to be supplemented by less formal understandings and arrangements.
- Firms must take into account the effects of their policies and actions on society as a whole. The expectations of workers, consumers and various interest groups create other dimensions of the external environment that firms must respond to. 'Externalities' (such as pollution, product safety and job security) must be considered when formulating policy. Some of these expectations are embodied in law, eg health and safety at work, employment protection, consumer protection, environmental protection. Beyond these laws, there are unwritten, implicit rules of behaviour. Companies' reputations can be seriously damaged if they are found to be untrustworthy or thought to be unethical, and there can be serious consequences for the share price. **[4]**

ii)

- A bill of exchange is a negotiable instrument.
- It is issued by a company/sole proprietor with good credibility, accepted by the receiver of a good, and guaranteed by an investment bank.
- Bills of exchange may be referred to as two-name instruments.
- The supplier may sell the bill to a discount house for cash rather than waiting for the acceptor to pay the bill at the end of the stated time period.
- Bills of exchange provide short-term cash/credit to the issuer.
- Where the endorser is an "eligible" bank, the bill is known as an "eligible bill of exchange" which is a very secure investment. **[3]**

[7 Marks]

Solution 13:

i)

- Executing monetary policy on behalf of the government, ie controlling interest rates and the money supply
- providing the liquidity needed by the banking system and acting as the "lender of last resort"
- maintaining the country's foreign reserves, and using these to influence exchange rates
- acting as the bankers' bank by providing a system for settlement of money market transactions between banks

- Providing interbank settlement systems (eg NEFT, RTGS)
- Managing the national debt and selling/buying back treasury bills and gilts for the government. **[3]**

ii)

For comparable mutual funds, the current level of NAV is purely based on past performance of the underlying portfolio. Also, because of the cumulative nature of NAV, the older the fund the higher should be the NAV. As past investment returns are not a guide to future performance, the NAV (which is a metrics of past performance) has no relevance to future performance. Hence the statement is true.

The other features that one may look at are:

- Charge structures
- Any penalties
- NAV calculation methodology
- Proportion of illiquid/less traded assets
- Tax benefits attached **[3]**

[6 Marks]

Solution 14:

i)

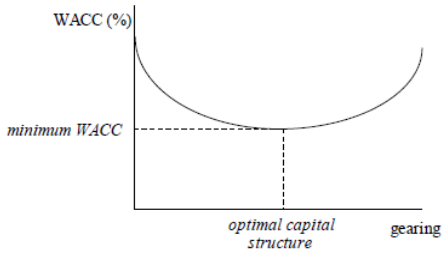
Investors will invest in the shares of this company:

- To diversify the portfolio(minimise systemic risk)
- To maximise return as they would be believing in earning higher returns(increasing idiosycratic risk)
- Other reasons specific to the investor eg strategic holding, personal attachment with the company, own faith and beliefs.

The suitable cost of capital is anything slightly higher than 6% (8%*0.5 + 4% * 0.5) **[3]**

ii)

Debt is cheaper than equity finance, so as gearing increases, the WACC should fall. However, increasing the proportion of debt finance increases the risk to shareholders so shareholders demand a greater return for this increased risk. Therefore beyond a certain level of gearing, the downward effect on the WACC of increasing the debt finance in the business will be more than offset by the increase in the return required by shareholders.



[3]

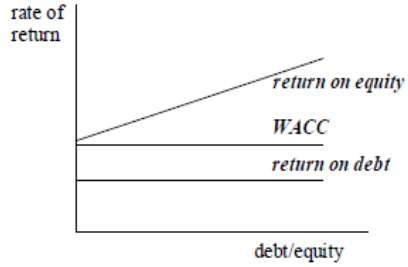
iii)

First proposition of Modigliani and Miller: The market value of any firm is independent of its capital structure.

The following are the assumptions:

- There are no taxes in the economy
- Unlimited personal and company borrowing is possible at the same rate of interest
- Debt is risk-free
- There are no agency costs
- There are no information asymmetries. **[2]**

iv)



WACC remains constant as gearing increases. As gearing increases, the cost of equity increases by just enough to offset the increasing proportion of the cheaper debt. **[2]**

v)

a) cost of equity = risk-free return + beta * (equity risk premium)
=6% + 1.4 *5%
=6% + 7% = 13% **[1]**

b) Geared equity beta = Ungeared Beta * [1 + (Debt:Equity ratio) * (1 - t)]
Here the Debt:Equity ratio is based on market capitalisation, therefore,
Geared equity beta = 1.4 * [1 + (0.5/0.5) * (1 – 0.3)]
= 1.4*(1+0.7)
=1.4*1.7
= 2.38 **[1]**

c) Cost of equity = risk-free return + beta * (equity risk premium)
=6% +2.38*5%
=17.9% **[1]**

[13 Marks]

Solution 15:

i)

EMI is given by EMI =P×r×(1 + r)^n/((1 + r)^n - 1)
Where P = 5 million
r = 15%
n = 8 Yrs
EMI = 1,114,250 **[1]**

ii)

The suitable cost of capital is 18% because the risk free borrowing is 15%, and the investors need a higher return to allow for the inherent risk in the project. The cost of capital cannot be equal to the risk free rate unless the project is completely risk free. It cannot be definitely less than the risk free rate, otherwise the investor will just invest the money in risk free assets rather than investing it in risky projects. **[2]**

iii)

T	Operating cost	Capacity (in Million)	Distributed (mn barrele)	Tariff(per barrel)	Revenue	Distribution cost	EMI	Net cashflow after EMI
1	1,100,000	1.00	0.85	1.50	1,275,000	2,382,500	1,114,250	(3,321,750)
2	1,210,000	2.00	1.70	2.00	3,400,000	3,020,000	1,114,250	(1,944,250)
3	1,331,000	3.00	2.55	2.50	6,375,000	3,912,500	1,114,250	17,250
4	1,464,100	4.00	3.40	3.00	10,200,000	5,060,000	1,114,250	2,561,650
5	1,610,510	5.00	4.25	3.50	14,875,000	6,462,500	1,114,250	5,687,740
6	1,771,561	6.00	5.10	4.00	20,400,000	8,120,000	1,114,250	9,394,189
7	1,948,717	7.00	5.95	4.50	26,775,000	10,032,500	1,114,250	13,679,532
8	2,143,589	8.00	6.80	5.00	34,000,000	12,200,000	1,114,250	18,542,161

[6]

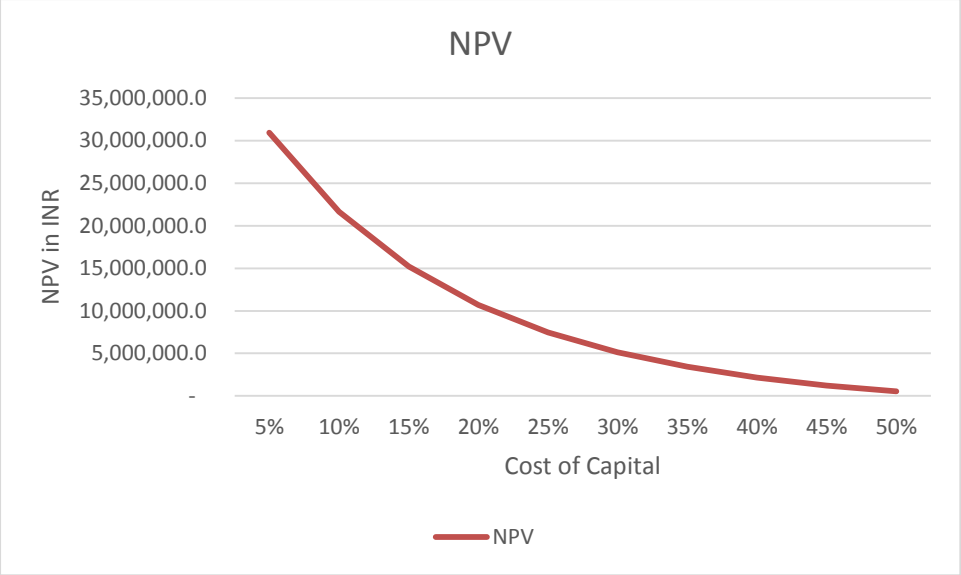
iv) Determine NPV of project at 18% = INR 12,313,733 **[1]**

v) NPV at several points (at least 5 are required)

Interest	NPV in INR
5%	30,933,745
10%	21,640,241
15%	15,210,649
20%	10,688,937
25%	7,462,416
30%	5,130,376
35%	3,425,820
40%	2,167,779
45%	1,231,642
50%	530,354

[2]

vi)



[2]

vii)

Perform iteration to find IRR = 55.0245% **[2]**

[16 Marks]

Solution 16:

i)

Statement of comprehensive income for the year ended on 31st March 2015

Particulars	Amounts in INR million			Marks
Revenue			20,000	1
Cost of Sales				
Opening inventory	750			0.5
Purchases	11,275			1
less Closing inventory	(600)	11,425		1 for closing inventory
Wages		1,500		1
Depreciation on Plant and machinery		950		0.5
Depreciation on Land and factory building		125	(14,000)	0.5
Gross profit			**6,000**	1
Sales and distribution expenses		1,215		0.5
Administrative Expenses				
Salaries to administrative staff	2,000			1
Other administrative expenses	1,400			1
Depreciation on Office equipment	50			0.5
Depreciation on Motor vehicles	50	3,500	(4,715)	0.5 for Depreciation
Operating Profit			**1,285**	0.5
Finance Cost			(285)	0.5
Profit before tax			**1,000**	
Corporate Tax			NIL	
Profit after tax			**1,000**	
Dividend paid to Preference shareholders			(60)	0.5
Total comprehensive income			**940**	0.5

[12]

ii)

Statement of financial position as on 31st March 2015

	Amounts in INR million		Marks
Non-current assets			
Land and factory building	2,375		0.5
Plant and Machinery	4,550		1.5
Office equipment	425		0.5
Motor Vehicles	150	7,500	0.5 for balance of Motor Vehicles
Investments			
		1,725	0.5
Current Assets			
Inventory	600		0.5
Trade Receivables	1,100		1
Administrative Expenses paid in advance	50		0.5
Cash	275	2,025	0.5 for cash balance
Total Assets		11,250	
Equity and Liabilities			
Equity share capital	1,500		1
Preference share capital	500		0.5
Reserves and retained earnings	6,250		1.5
Total Equity		8,250	
Non-current liabilities		1,750	
Long term debt	1,750		1.5
Current Liabilities		1,250	
Trade Payable	1,000		1
Outstanding salary of administrative staff	250		0.5
Total liabilities		3,000	
Total equity and liabilities		11,250	

[12]

Working Notes

A)

Plant and machinery	Amounts in INR million
Total depreciation	950
Less: Half year depreciation on new machinery purchased	150
Depreciation for plant and machinery at the beginning of the year	800
Value of plant and machinery as at 31st March 2014 (800/20%)	4000
Add: New machinery purchased	1500
Less: Depreciation for the year	950
Value of plant and machinery as at 31st March 2015	**4550**

B)

	Land and Factory Building	Office Equipment	Motor Vehicles
Depreciation for the financial year 2014-15 (i)	125	50	50
Rate of depreciation (ii)	5%	10%	25%
Period for which depreciation charged	1 year	1 year	1 year
Value of the asset at the beginning of the year (iii) = (i)/(ii)	2,500	500	200
Sale at the end of the year (iv)	Nil	25	Nil
Value of asset as at 31st March 2015 (v) = (iii) - (iv) - (i) in INR million	2,375	425	150

C)

Long term debt

Total interest paid during the year = INR 285 million

Let Long term debt balance as on 01st April 2014 be 'x'.

Hence Long term debt balance as at 30th September 2014 = 'x-1250'

Interest = $(x * 12\% * \frac{6}{12})$ + {(x-1250)*12%*$\frac{6}{12}$}

= 0.06x + 0.06x – 75

= 0.12x – 75

0.12x – 75 = 285

0.12x = 360

X =3000

Long term debt balance as on 01st April 2014 is INR 3,000 million

Long term debt balance as on 31st March 2015 is INR 1,750 million

D)

Equity share capital added during the year	Amounts in INR
Earnings per share (i)	62.6667
Profit transferred to reserves (ii) in million	940
Total number of equity share as on 31st March 2015 (ii/i) in million	15
Face value per equity share	INR 100
Total equity share capital as at 31st March 2015 in million	1500

E)

Preference share capital = Preference dividend ÷ Rate of Preference dividend
= 60 ÷ 12%
=INR 500 million

F) Reserves and retained earnings

Let reserves and retained earnings as at 31st March 2015 be 'y'.
Capital gearing ratio 0.2258
Capital gearing ratio = Long term debts/(Equity + Reserves & retained earnings)
0.2258 = 1750/(1500+y)
1500+y = 1750/0.2258
y= 7750-1500
= 6250
Reserves and retained earnings as at 31st March 2015 is INR 6250 million.

G) Sales made during the year ended on 31st March 2015

Asset Utilization ratio

$$= \frac{\text{Sales}}{(\text{Equity share capital} + \text{preference share capital} + \text{reserve \& } surplus + Long\ Term\ Debt)}$$

2 = Sales / (1500 + 500 + 6250 + 1750)
Sales = 2 * (1500 + 500 + 6250 + 1750)
Sales = INR 20,000 million

H) Trade receivables as at 31st March 2015

Trade receivable turnover period = (Trade receivables / Credit sales)*365
As there are no cash sales, Credit sales = Total sales
20.075 days = (Trade receivables / 20,000) * 365
Trade receivables = (20.075*20,000)/365
Trade receivables = INR 1,100 million

I) Trade payables as at 31st March 2015

$$\text{Quick ratio} = \frac{\text{Trades receivables + prepaid administrative expenses + cash}}{(\text{Trade payables + outstanding salaries})}$$

1.14 = (1,100 + 50 + 275) / (Trade payables + 250)
Trade payables = (1,425/1.14) - 250
Trade payables = INR 1,000 million

J) Inventories as at 31st March 2015

$$\text{Current ratio} = \frac{\text{Trades receivables + prepaid administrative expenses + cash+ inventory}}{\text{(Trade payables + outstanding salaries)}}$$

1.62 = (1,100 + 50 + 275 + inventory) / (1,000 + 250)

1.62 = (1,425 + inventory) / (1,250)

Inventory = (1.62 * 1,250) – 1,425

Inventory as at 31st March 2015 = INR 600 million

Inventory as at beginning of the year = INR 600 million + INR 150 million

= INR 750 million

K) Purchases made for the year ended on 31st March 2015

Trade payables turnover period = Trade payables / credit purchases * 365

36.5 = 1,000 / Credit purchases * 365

Credit purchases = (1,000 / 36.5) *365

Credit purchases = INR 10,000 million

Total purchases = Credit purchases + cash purchases

= INR 10000 million + INR 1275 million

= INR 11275 million

Expenses to be debited to the Income statement for the year ended 31st March 2015
(Amounts in INR million)

Particulars	Administrative expenses	Administrative staff salaries	Wages Paid
Expenses paid during the year	1,550	1,750	1,350
Less: Outstanding for the year ended on 31st March 2014 paid during the current year	100		
Add: Outstanding for the year ended on 31st March 2015		250	
Add: Expenses paid for in the year ended on 31st March 2014 but pertaining to the year ended on 31st March 2015			150
Less: Expenses paid for in the year ended on 31st March 2015 but pertaining to the subsequent year	50		
Expenses to be debited to the Income statement for the year ended 31st March 2015	**1,400**	**2,000**	**1,500**

[24 Marks]

Solution 17:

Alternative 1:
Investible amount after capital gains tax= INR 4.5 million * 80% = INR 3.6 million

Number of shares of Ranveer Pvt Ltd purchased = INR 3.6 million ÷ INR 120/share = 30,000

Face value of the Shares = INR 100 × 30000 = INR 3 million

Annual dividend = INR 3 million × 12% = INR 0.36 million

Sale proceeds of the shares after 3 years = 30000 share × INR 150/share = INR 4.5 million

Present value of the investments = $(0.36v + 0.36v^2 + 0.36v^3) + 4.5v^3$ = INR 4.5 million

Alternative 2:
Interest receivable after every 6 months = INR 4.5 million × 3% = INR 0.135 million

Tax payable at the end of each year = INR 4.5 million × 6% × 10% = INR 0.027 million

Maturity proceeds received = INR 4.5 million × 105% = INR 4.725 million

Present value of the investment = $(0.135v^{0.5} + 0.135v + 0.135v^{1.5} + 0.135v^2 + 0.135v^{2.5} + 0.135v^3) - (0.027v + 0.027v^2 + 0.027v^3) + 4.725v^3$ = INR 4.3907 million

Ms. Deepika should select Alternative 1 as its present value is more than the present value of Alternative 2

[9 Marks]

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