SUGGESTED SOLUTION

IPCC NOVEMBER 2016 EXAM

FINANCIAL MANAGEMENT

Test Code - I N J1 1 3 8

BRANCH - (MULTIPLE)(Date : 21.08.2016)

Answer-1 :
Cost of Equity (K_e)

K_e = Risk free interest rate + (Beta X Average Market Risk Premium)
= 5.5%+ (1.1875 X 8%) = 15%

Yield to Maturity on Preference Shares and Cost of Preference Shares

$$98.5 = \frac{10.5}{(1+YTM)^1} + \frac{10.5}{(1+YTM)^2} + \frac{10.5}{(1+YTM)^3} + \frac{10.5}{(1+YTM)^4} + \frac{10.5}{(1+YTM)^5}$$

YTM = 11% (approx.)

$\therefore K_p$ = 11%

(1 Mark)

Yield to Maturity on Debentures and Cost of Debentures (K_d)

$$981.05 = \frac{95}{(1+YTM)^1} + \frac{95}{(1+YTM)^2} + \frac{95}{(1+YTM)^3}$$

YTM = 10% (approx.)

$\therefore K_d$ = YTM (1 - T) = 10% (1 – 0.35) = 6.5%

Cost of Term Loans (K_t)

K_t = I (1 - T) = 8.5% (1 - 0.35) = 5.525%

(1 Mark)

Calculation of WACC (on market value basis)

Source	Market value (Rs.)	Proportion	Cost of capital	Weighted average capital
Equity share capital	9,000.000	0.813	15%	12.195
10.5% Preference share capital	98.150	0.009	11%	0.099
9.5% Debentures	1471.575	0.133	6.5%	0.865
8.5% Term Loans	500.000	0.045	5.525%	0.249
	11069.725	1.000		WACC = 13.408

(3 Marks)

(ii)   Marginal Cost of Capital Schedule for the firm if it raises Rs. 750 million for a new project.

K_e of new project = 5.5% + (8% x 1.4375) = 17%

K_d of new project

on first 100 million = 9.5% + (1 – 0.35) = 6.175%

for next 50 million = 10% (1 0.35) = 6.5%

Marginal Cost of Capital

$$= \left[17\% \times \frac{600}{750}\right] + \left[6.175\% \times \frac{100}{750}\right] + \left[6.5\% \times \frac{50}{750}\right]$$

= 13.6% + 0.82% + 0.43% = 14.85%

(3 Marks)

Answer-2 :
Calculation of NPV at different discounting rates

Particulars			Project C			Project D
0%	(10,000)	1.00	(10,000)	(10,000)	1.000	(10,000)
	2,000	1.00	2,000	10,000	1.000	10,000
	4,000	1.00	4,000	3,000	1.000	3,000
	12,000	1.00	12,000	3,000	1.000	3,000
			NPV = 8,000			NPV = 6,000
			Rank I			**Rank II**
10%	(10,000)	1.0000	(10,000)	(10,000)	1.0000	(10,000)
	2,000	0.9090	1,818	10,000	0.9090	9,090
	4,000	0.8264	3,306	3,000	0.8264	2,479
	12,000	0.7513	9,016	3,000	0.7513	2,254
			NPV = 4,140			NPV = 3,823

			Rank I			**Rank U**
15%	(10,000)	1.0000	(10,000)	(10,000)	1.0000	(10,000)
	2,000	0.8696	1,739	10,000	0.8696	8,696
	4,000	0.7561	3,024	3,000	0.7561	2,268
	12,000	0.6575	7,890	3,000	0.6575	1,973
			NPV = 2,653			NPV = 2,937
			Rank II			**Rank I**
30%	(10,000)	1.0000	(10,000)	(10,000)	1.0000	(10,000)
	2,000	0.7692	1,538	10,000	0.7692	7,692
	4,000	0.5917	2,367	3,000	0.5917	1,775
	12,000	0.4552	5,462	3,000	0.4552	1,366
			NPV = (633)			NPV = 833
			Rank II			**Rank I**
40%	(10,000)	1.0000	(10,000)	(10,000)	1.0000	(10,000)
	2,000	0.7143	1,429	10,000	0.7143	7,143
	4,000	0.5102	2,041	3,000	0.5102	1,531
	12,000	0.3644	4,373	3,000	0.3644	1,093
			NPV = (2,157)			NPV = (233)
			Rank II			**Rank I**

(8 Marks)

(i) Reason for Conflict in Ranking

The conflict in ranking arises because of skewness in cashflows. The cash flows of project occur more in later of its life. But in case of project D, the cashflows occur at the beginning of its life.

- At lower discount rate, project C's NPV will be higher than that of project D.
- As the discount rate increases, project C's NPV will fall at a faster rate, due to compounding effect.
- After break even discount rate, project D has higher NPV as well as higher IRR.

(1 Mark)

(ii) If the opportunity cost of funds is 10%, project C should be acceptedbecause the firm's wealth will increase by Rs. 316 (i.e., Rs.4,139 - Rs. 3,823)

(1 Mark)

Incremental Analysis   **(Rs.)**

Project	Cash flows (Rs.)				NPV at 10%	IRR 12.5%
	C_0	C_1	C_2	C_3		
C – D	0	-8,000	1,000	9,000	(-8,000 x 0.909) + (1,000 x 0.8264) + (9,000 x 0.7513)	(-8,000 x 0.88884) + (1,000 x 0.7898) + (9,000 x 0.7019)

Hence, Project C should be accepted, when opportunity cost of funds is 10%.

(2 Marks)

Answer-3 :

Statement showing Working Capital for each policy

(Rs. in crores)

	Working Capital Policy		
	Conservative	**Moderate**	**Aggressive**

	Conservative	Moderate	Aggressive
Current Assets: (i)	4.50	3.90	2.60
Fixed Assets: (ii)	2.60	2.60	2.60
Total Assets: (iii)	7.10	6.50	5.20
Current liabilities: (iv)	2.34	2.34	2.34
Net Worth: (v)=(iii)-(iv)	4.76	4.16	2.86
Total liabilities: (iv)+(v)	7.10	6.50	5.20
Estimated Sales: (vi)	12.30	11.50	10.00
EBIT: (vii)	1.23	1.15	1.00
(a) Net working capital position: (i)-(iv)	2.16	1.56	0.26
(b) Rate of return: (vii)/(iii)	17.3%	17.7%	19.2%
(c) Current ratio: (i)/(iv)	1.92	1.67	1.11

(5 Marks)

Statement Showing Effect of Alternative Financing Policy

(Rs. in crores)

Financing Policy	Conservative	Moderate	Aggressive
Current Assets: (i)	3.90	3.90	3.90
Fixed Assets: (ii)	2.60	2.60	2.60
Total Assets: (iii)	6.50	6.50	6.50
Current Liabilities: (iv)	2.34	2.34	2.34
Short term Debt: (v)	0.54	1.00	1.50
Long term Debt: (vi)	1.12	0.66	0.16
Equity Capital	2.50	2.50	2.50
Total liabilities	6.50	6.50	6.50
Forecasted Sales	11.50	11.50	11.50
EBIT: (vii)	1.15	1.15	1.15
Less: Interest on short-term debt : (viii)	0.06	0.12	0.18
	(12% of Rs. 0.54)	(12% of Rs. 1.00)	(12% of Rs. 1.50)
Long term debt : (ix)	0.18	0.11	0.03
	(16% of Rs. 1.12)	(16% of Rs. 0.66)	(16% of Rs. 1.16)
Earnings before tax : (x)-(viii+ix)	0.91	0.92	0.94
Taxes @ 35%	0.32	0.32	0.33
Earnings after tax: (xi)	0.59	0.60	0.61
(a) Net Working Capital Position : (i)-[(iv)+(v)]	1.02	0.56	0.06
(b) Rate of return on shareholdersEquity capital : (xi)	23.6%	24%	24.4%
(c) Current Ratio :[(i)/(iv)+(v)]	1.35%	1.17	1.02

(5 Marks)

Answer-4 :

Working notes

(1)   Sales Realization   **(Rs.)**

	March	April	May	June	July
Cash sales (20%)	32.00	40.00	32.00	40.00	36.00
Realization from debtors (80%)	128.00	112.00	128.00	160.00	128.00
	160.00	**152.00**	**160.00**	**200.00**	**164.00**

(2 Marks)

(2)   Payment for Purchases

	Jan.	Feb.	Mar.	Apr.	May	June	July
Purchases	96	120	96	120	108	144	120
Payment to creditors	-	-	96	120	96	120	108

(2 Marks)

	Mar.	Apr.	May	June	July
(3) Variable Expenses	7.50	9.00	9.00	9.00	9.50

$$\left[\frac{140+160}{2} \times 5\% \right] \text{ and so on}$$

(2 Marks)

(4)   Commission @ 5% on credit sales paid in the 3rd month i.e., for January 2009 sales paid in March 2009 and so on.

Cash Budget - March to July 2009   **(Rs. '000)**

Particulars	March	April	May	June	July
Opening cash balance	50.00	54.10	65.50	8.10	65.10
Receipts.					
Sales realization	160.00	152.00	160.00	200.00	164.00
(a)	**210.00**	**206.10**	**225.50**	**208.10**	**229.10**
Payments:					
Creditors for purchases	96.00	120.00	96.00	120.00	108.00
Variable expenses	7.50	9.00	9.00	9.00	9.50
Commission	6.40	5.60	6.40	8.00	6.40
Rent and other expenses	6.00	6.00	5.00	6.00	6.00
Taxes	40.00	-	-	-	-
Addition to fixed assets					
(b)	**155.90**	**140.60**	**216.40**	**143.00**	**129.90**
Closing balance (a) – (b)	**54.10**	**65.50**	**9.10**	**65.10**	**99.20**

(4 Marks)

Answer-5 (a) :
Computation of Rate of Interest and Revised Maturity Value
Principal = Rs. 10,000
Amount = Rs. 12,625

$$10,000 = \frac{12,625}{(1+i)^4}$$

P_n = A x (PVF$_{n,i}$)
0.7921 – (PVF$_{4,i}$)

(2.5 Marks)

According to the Table on Present Value Factor (PVF$_{4,i}$) of a lump sum of Re. 1, a PVF of 0.7921 for half year at interest (i) = 6 percent. Therefore, the annual interest rate is 2 × 0.06 = 12 percent.

i = 6% for half year
i = 12% for full year.

Therefore, Rate of Interest = 12% per annum

Revised Maturity Value $= 10,000 \left[1+\frac{12}{100} \times \frac{1}{4}\right]^{2\times4} = 10,000\left(1+\frac{3}{100}\right)^8 = 10,000(1.03)^8$

= 10,000 x 1.267 [Considering (CVF$_{8,3}$) = 1.267]
Revised Maturity Value = 12,670.

(2.5 Marks)

Answer-5 (b) :
Computation of Compound Value and Compound Interest
Semiannual Rate of Interest (i) = 8/2 = 4 %
n = 5 x 2 = 10, P = Rs. 75,000
Compound Value = P (1+i)^n
= 75,000 (1+4 %)^{10}
= 75,000 x 1.4802
= Rs. 1,11,015
Compound Interest = Rs. 1,11,015 – Rs. 75,000 = Rs.36,015

(5 Marks)