#### CA INTER - FM - NEW SCHEME

# MAY 2024 EXAM – QUESTION PAPER WITH SOLUTION By CA, CPA Vinod Kumar Agarwal

(AIR 2 - CA Foundation, AIR 4 - CA Intermediate and AIR 24 - CA Final)

# **About CA, CPA Vinod Kumar Agarwal**

#### **Summary:**

Founder Member of A.S. Foundation, India's Leading Academy for C.A. Course, CA Vinod Kumar Agarwal is a fellow member of ICAI and a past member of the Board of Studies, ICAI. With a teaching experience of twenty one years, he has guided more than 1,00,000 students and is ranked as one of the best teachers for Accounts and Financial Management at Intermediate level and Financial Reporting and AFM at Final Level. He has authored books on Accounts, Advanced Auditing for CA Final, Auditing for Intermediate, Accounting Standards, Ind AS, Costing and Financial Management, and his books have sold more than 2,00,000 copies.

#### **Education:**

- Passed the Certified Public Accountant (CPA) (USA) exam in 2007.
- Post-graduation from Pune University with First Class.
- Graduation from B.M.C.C, Pune with distinction.
- Passed the Diploma in Business Finance Conducted by ICFAI, Hyderabad.
- Passed the Derivative Module test conducted by National Stock Exchange.
- Also appeared for UPSC exam and cleared Mains twice.

#### **Teaching Experience:**

- Teaches Accounts, Advanced Accountancy, Financial management and Economics for Finance at CA Intermediate Level and Financial Reporting and Advanced Financial Management (AFM) at CA Final level.
- Pioneer of creating and distributing video tutorials in pen drives/google drive among students.
- Produced All India Toppers (1st Rank) in CPT examination and final examination apart from more than 250 all India meritholders.
- More than 30000 Facebook subscribers, more than 1,35,000 YouTube subscribers.
- Sold more than 40000 video lectures in pen-drive and google-drive mode.
- In 2019, launched a brand VKNOW, to become a national brand for digital learning.

#### **Publications and Achievements:**

- A merit holder in all the three levels of exams conducted by ICAI (2nd rank, 4th rank, and 24th rank in CA Foundation, CA Intermediate and CA Final respectively).
- Scored 99 marks in Accountancy in CA Foundation.
- Authored books on Accounts, Advanced Auditing for CA Final, Auditing for Intermediate, Accounting Standards, Ind AS, Costing and Financial Management.
- Complied a book "No Truth, Only Interpretations", a book on motivation, inspiration and guidance.
- Compiled a book, "Mind Candy", a book on motivation.
- Compiled a book, "Sweet Voice", a book on inspirational quotes.
- Working experience with India's top firms Firms like M/s. S.B. Billimoria and A.F. Ferguson (both member firm of Deloitte).
- Published article in the Students Newsletter of ICAI on "Valuation of Equity Shares" and "Stock Market Index".
- Presented a paper on "Corporate Governance and Role of Auditor" in National Students Conference held in Goa.

#### **Teaching Approach:**

- Simple and effective way of teaching through concept building, class-room practice, home-exercise, and power-point presentation.
- A large variety of problems are solved in the class to meet the examination requirements.
- Notes are updated frequently covering amendments and exam problems.

## PROBLEM: 1 (a)

Theme Ltd provides you the following information:

12.5 % Debt ₹ 45,00,000

Debt to Equity ratio 1.5 : 1

Return on Shareholder's fund 54%

Operating Ratio 85%

Ratio of operating expenses to Cost of Goods sold 2 : 6

Fixed Assets ₹39,00,000

Current Ratio 1.8:1

You are required to calculate:

- (i) Interest Coverage Ratio
- (ii) Gross Profit Ratio

(iii) Current Assets (5 Marks)

25%

#### Solution:

Tax rate

#### Step 1: Calculation of Equity

Debt to Equity Ratio = 1.5

Debt / Equity = 1.5

45,00,000/Equity = 1.5

Equity = 45,00,000/ 1.5 = 30,00,000

#### Step 2: Calculation of Net Profit After Tax

Return on shareholder's Fund = 54%

Equity = Rs 30,00,000

Therefore, Net profit after tax = 54% x 30,00,000

= 16,20,000

#### **Step 3: Calculation of operating Profit (EBIT)**

		Rs
Α	PAT (Step 2)	16,20,000
В	Tax Rate	25%
С	PBT (PAT/75%)	21,60,000
D	Add back: Interest (12.5% x 45,00,000)	5,62,500
Ε	EBIT (C + D) (Operations Profit)	27,22,500

#### Step 4: Calculation of sales and operating cost

		Rs
Α	Operating Profit (Step 3)	27,22,500
В	Operating Ratio	85%
С	Operating Profit Ratio (100 – 85)	15%
D	Sales (A/C)	1,81,50,000
Ε	Operating Cost (1,81,50,000 x 85%)	1,54,27,000

#### Step 5: Calculation of cost of goods sold and operating expenses

Given,

Ratio of operating expenses to cost of goods sold = 2:6

Total operating cost = 1,54,27,500

Therefore, Operating expenses =  $2/8 \times 1,54,27,500$ 

= 38,56,875

Therefore, Cost of goods sold =  $6/8 \times 1,54,27,500$ 

= 1,15,70,625

#### Step 7: Interest Coverage Ratio = EBIT / Interest

#### **Step 8: Gross Profit Ratio**

Gross Profit = Sales - COGS

$$= 1,81,50,000 - 1,15,70,625 = 65,79,375$$

Gross Profit Ratio = Gross Profit / Sales

= <u>65,79,375</u> x 100 1,81,50,000

= 36.25%

#### **Step 9: Calculation of current Assets**

Debt + Equity = Fixed Assets + Working Capital

45,00,000 + 30,00,000 = 39,00,000 + Working Capital

Therefore, Working Capital = 36,00,000

Current Ratio = 1.8

Let current assets be 1.8x and current liabilities be x

Current Assets - Current Liabilities = Working Capital

1.8x - x = 36,00,000

0.8x = 36,00,000

X = 36,00,000/0.8 = 45,00,000

1.8x = 81,00,000

Therefore, Current Assets = Rs 81,00,000

## PROBLEM: 1 (b)

Alpha Limited has provided following information:

Equity Share Capital	25,000 Shares @ ₹ 100 per Share
15% Debentures	10,000 Debentures @ ₹ 750/- per Debenture
Sales	50 Lakhs units @ ₹ 20 per unit
Variable Cost	₹ 12.50 per unit
Fixed Costs	₹ 175.00 Lakhs

Due to recent policy changes and entry of foreign competitors in the sector, Alpha Limited expects the sales may decline by 15-20%, However, selling price and other costs will remain the same. Corporate Taxes will continue @ 20%.

You are required to calculate the decrease in Earnings per share, Degree of Operating Leverage and Financial Leverage separately if sales are declined by (i) 15%; and (ii) 20%. (5 Marks)

#### Solution:

## Calculation of Decrease in EPS, Operating Leverage and financial leverage

		Present Situation	Sales Decreases by 15%	Sales Decreases by 20%
Α	Sales (units)(lakhs)	50	42.50	40
В	Selling Price per unit (Rs)	20	20	20
С	Sales Value (Rs lakhs)	1000	850	800
D	Variable cost (A x 12.50)	625	531.25	500
Е	Contribution (C – D)	375	318.75	300
F	Fixed Costs	175	175	175
G	EBIT (E – F)	200	143.75	125
Н	Debenture Interest (10,000 x 750 x 15%)	11.25	11.25	11.25
I	EBT (G – H)	188.75	132.50	113.75
J	Tax @ 20 %	37.75	26.50	22.75
K	PAT (I – J)	151	106	91
L	No. of shares (lakhs)	0.25	0.25	0.25
М	EPS (Rs) (K/L)	604	424	364
N	Decrease in EPS		180 (604 – 424)	240 (604 – 364)
0	% Decrease in EPS		29.8% (180 / 604)	39.74% (240 / 604)
P	Operating Leverage = <u>Contribution</u> EBIT	1.875	2.21	2.40
Q	Financial Leverage = <u>EBIT</u> EBIT	1.06	1.08	1.10

## PROBLEM: 1 (c)

Following is the sales information in respect of Bright Ltd:

Annual Sales (90 % on credit) ₹ 7,50,00,000

Credit period 45 days
Average Collection period 70 days
Bad debts 0.75%

Credit administration cost (out of which 2/5th is avoidable) ₹ 18,60,000

A factor firm has offered to manage the company's debtors on a non-recourse basis at a service charge of 2%. Factor agrees to grant advance against debtors at an interest rate of 14% after withholding 20% as reserve. Payment period guaranteed by factor is 45 days. The cost of capital of the company is 12.5%. One time redundancy payment of ₹ 50,000 is required to be made to factor.

Calculate the effective cost of factoring to the company. (Assume 360 days in a year) (5 Marks)

#### **Solution:**

**Step 1: Net Amount Advanced by Factor** 

		Rs
Α	Annual Credit Sales (90% x 7,50,00,000)	6,75,00,000
В	Average Receivables (6,75,00,000 x 45/360)	84,37,500
С	Less : Factor Reserve (20% x 84,37,500)	16,87,500
D	Balance	67,50,000
Е	Less : Service charges (2% x 84,37,500)	1,68,750
F	Balance	65,81,250
G	Interest charged by factor (65,81,250 x 14% x 45/360)	1,15,172
Н	Amount available for advance	64,66,078

Note - It is assumed that interest and service charges are collected upfront.

#### Step 2: Annual Saving (Benefits) in taking factoring

		Rs
Α	Interest saved due to reduction in average collection period	5,85,938
	(6,75,00,000 x (70-45) /360 x 12.5%)	
В	Bad Debts avoided (0.75% x 6,75,00,000)	5,06.250
С	Credit administration cost avoided (18,60,000 x 2/5)	7,44,000
	Total	18,36,188

#### **Step 3: Net Annual Cost of Factoring**

		Rs
Α	Service Charge (2% x 6,75,00,000)	13,50,000
В	Interest Charged (1,15,172 x 360/45)	9,21,376
С	Redundancy Payment	50,000
D	Opportunity cost on Redundancy Payment (50,000 x 12.5%)	6,250
E	Total Cost (A + B + C + D)	23,27,626

F	Less: Annual Benefits (Step 2)	(18,36,188)
G	Net Annual Cost (E – F)	4, 91,438

**Note** - It is assumed that Redundancy Payment will be made by the company separately and we will consider opportunity cost for 1 year at cost of capital of 12.5%. We also assume that factoring arrangement is for one year.

### **Step 4: Effective Cost of factoring**

- Net Annual Cost of Factoring x 100
   Amount Available for Advance
- = <u>4,91,438</u> x 100 64,66,078
- = 7.6 %

#### Question 2(a)

**Step 1: = Cost of Equity Share Capital (Ke)** 

Ke using CAPM = Rf + 
$$\beta$$
 (Rm - Rf)  
= 6 + (1.54 x 8)  
= 18.32%

Step 2: Cost of Retained Earnings (Kr)

#### **Step 3: Cost of convertible debentures**

(a) Determination of redemption value

#### Higher of -

- (i) Cash value of debenture = Rs 100
- (ii) Value of equity share =  $4 \times 25 \times (1.06)^5 = 133.84$

Hence, Rs 133.84 will be taken as redemption value.

Note - We have taken 5 years because the remaining maturity is 5 years from 31.03.2024.

(b) Cost of 13% convertible debenture using approximation method (Kd)

Kd = I(1-T) + 
$$\frac{(RV - NP)}{n}$$

$$\frac{RV + NP}{2}$$
= 13 (1 - 0.25) +  $\frac{(133.84 - 100)}{5}$ 

$$\frac{133.84 + 100}{2}$$
= 14.13%

#### Step 4: Cost of Redeemable pref. Shares (Kp)

#### **Step 5: Cost of Term Loan**

$$KT = I (1 - T)$$
  
= 11 (1 - 0.25)  
= 8.25%

## PROBLEM: 2 (b)

Following data is available in respect of Levered and Unlevered companies having same business risk : Capital employed = ₹ 2,00,000, EBIT = 25,000 and  $K_e = 12.5\%$ 

Sources	Levered Company (₹)	Unlevered Company (₹)
Debt (@ 8 %)	75,000	Nil
Equity	1,25,000	2,00,000

An investor is holding 12% shares in levered company. Calculate the increase in annual earnings of investor if he switches over his holding from Levered to Unlevered company. (4 Marks)

#### **Solution:**

Step 1: Calculation of Value of two firms

		Levered Firm	Unlevered Firm
Α	EBIT	25,000	25,000
В	Less: Interest (8% x 75,000)	6,000	-
С	Earnings available to equity shareholders (A-B)	19,000	25,000
D	Cost of Equity (Ke)	12.5%	12.5%
Е	Value of Equity (C/D)	1,52,000	2,00,000
F	Add: Value of Debt	75,000	0
G	Value of firm (E + F)	2,27,000	2,00,000

Note:- Value of levered firm is more than that of unlevered firm. Therefore, investor will sell shares in levered company and buy shares of unlevered company. To maintain the level of risk he will borrow proportionate amount and invest that amount also into the shares of unlevered firm.

#### **Step 2: Investment and Borrowings**

		Rs
Α	Sell shares in levered firm (12% x 1,52,000)	18,240
В	Borrow money @ 8% (12% x 75,000)	9,000
С	Buy shares in Unlevered Company	27,240

## Step 3: Increase in Annual Earnings of Investor

		Rs
Α	Income from shares in Unlevered firm	3,405
	<u>27, 240</u> x 25,000 Or (27,240 x 12.5%)	
	2,00,000	
В	Less: Interest on Loan (8% x 9,000)	(720)
С	Net Income from Unlevered Firm (A – B)	2,685
D	Less: Income from levered firm (12% x 19,000)	(2280)
E	Increase in Income of investor due to arbitrage (C – D)	405

## PROBLEM: 3 (a)

HCP Ltd. is a leading manufacturer of railway parts for passenger coaches and freight wagons. Due to high wastage of material and quality issues in production, the General Manager of the company is considering the replacement of machine A with a new CNC machine B. Machine A has a book value of ₹ 4,80,000 and remaining economic life is 6 years. It could be sold now at ₹ 1,80,000 and zero salvage value at the end of sixth year. The purchase price of Machine B is ₹ 24,00,000 with economic life of 6 years. It will require ₹ 1,40,000 for installation and ₹ 60,000 for testing. Subsidy of 15% on the purchase price of the machine B will be received from Government at the end of 1st year. Salvage value at the end of sixth year will be ₹ 3,20,000.

The General manager estimates that the annual savings due to installation of machine B include a reduction of three skilled workers with annual salaries of  $\mathbb{T}$  1,68,000 each,  $\mathbb{T}$  4,80,000 from reduced wastage of materials and defectives and  $\mathbb{T}$  3,50,000 from loss in sales due to delay in execution of purchase orders. Operation of Machine B will require the services of a trained technician with annual salary of  $\mathbb{T}$  3,90,000 and annual operation and maintenance cost will increase by  $\mathbb{T}$  1,54,000. The company's tax rate is 30% and it's required rate of return is 14%. The company follows straight line method of depreciation. Ignore tax savings on loss due to sale of existing machine.

The present value factors at 14% are:

Years	0	1	2	3	4	5	6
PV Factor	1	0.877	0.769	0.675	0.592	0.519	0.456

#### Required:

- (i) Calculate the Net Present Value and Profitability Index and advise the company for replacement decision.
- (ii) Also calculate the discounted pay-back period.

(7 Marks)

#### Solution:



## Step 1: Calculation of Initial Cash Outflow

		Rs	Rs
Α	Cost of New Machine		
	Purchase Price	24,00,000	
	Installation	1,40,000	
	Testing	<u>60,000</u>	26,00,000
В	Less: Sale Processes of old machine		(1,80,000)
С	Less: PV of Govt Subsidy at the end of year 1 (24 lacs x 15% x 0.877)		(3,15,720)
D	Initial Cash Outflow		21.04,280

# Step 2: Govt Subsidy at the end of 1st year

= 15% x 24,00,000 = 3,60,000

# Step 3: Incremental Income before depreciation and tax from New Machine

		Rs
Α	Annual Savings:	
	(i) Reduction in Salaries (1,68,000 x 3)	5,04,000
	(ii)Reduction in Material Wastage & Defectives	4,80,000
	(iii)Reduction in lost sales	<u>3,50,000</u>
		13,34,000
В	Additional Costs:	
	(i)Salary of one trained technician	3,90,000
	(ii)Increase in operation & maintenance cost	<u>1,54,000</u>
		<u>5,44,000</u>
С	Incremental Income before depreciation and tax	7,90,000

## **Step 4: Incremental Depreciation**

		Rs
Α	Depreciation on New Machine (SLM)	
	= <u>(Total cost – Subsidy) – Salvage Value</u> No. Of years	
	= <u>(26,00,000 – 3,60,000 – 3,20,000</u> 6	3,20,000
В	Depreciation on old Machine	
	= <u>4,80,000 - 0</u> 6	80,000
С	Incremental Depreciation (A – B)	2,40,000

### **Step 5: Calculation of Incremental CFAT**

		Rs
Α	Incremental Profit Before Depreciation and Tax (Step 3)	7,90,000
В	Less: Incremental Depreciation (Step 4)	(2,40,000)
С	Incremental PBT (A-B)	5,50,000
D	Incremental PAT [5,50,000 X (1 - 0.30)]	3,85,000
Е	Incremental CFAT (3,85,000 + 2,40,000)	6,25,000

### Step 6: Calculation of NPV

Year	Particulars	Cash Flow	PV @ 14%	Present Value
0	Initial cash flow (Step 1)	(21,04,280)	1	(21,04,280)
1-6	Incremental CFAT (Step 5)	6,25,000	3.888	24,30,000
6	Salvage Value of New Machine	3,20,000	0.456	1,45,920
	NPV			4, 71,640

### **Step 7: Profitability Index (PI)**

PI = <u>PV of Cash Inflows</u> PV of Cash Outflows

 $PI = \frac{25,75,920}{21,04,280}$ 

= 1.224

**Advice** – The company should replace the old machine by the new one because NPV is positive. Positive NPV maximizes the wealth of shareholders.

**Step 8: Calculation of Discounted Payback Period** 

Year	Cash flow	PV @ 14%	Present Value	Cumulative Present Value
1	6,25,000	0.877	5,48,125	5,48,125
2	6,25,000	0.769	4,80,625	10,28,750
3	6,25,000	0.675	4,21,875	14,50,625
4	6,25,000	0.592	3,70,000	18,20,625
5	6,25,000	0.519	3,24,375	21,45,000
6	6,25,000 + 3,20,000 = 9,45,000	0.456	6,25,000	25,75,920

### **Discounted Payback Period**

= 4 Years + <u>21,04,280 - 18,20,625</u> 3,24,375

= 4.87 years

## PROBLEM: 3 (b)

Vista Limited's retained earnings per share for the year ending 31.03.2023 being 40% is ₹3.60 per share. Company is foreseeing a growth rate of 10% per annum in the next two years. After that the growth rate is expected to stabilize at 8% per annum. Company will maintain its existing pay-out ratio. If the investor's required rate of return is 15%, Calculate the intrinsic value per share as of date using Dividend Discount model. (3 Marks)

#### Solution:

Step 1: Calculation of EPS and Dividend Payout Ratio

		Rs
Α	Retained Earnings Per Share	3.60
В	Retention Ratio	40%
С	EPS (A/B)	9
D	Dividend Payout Ratio (100 – 40)	60%

#### Step 2: Calculation of Intrinsic Value per share

First calculate PV of Dividend for first two years (Growth rate of first two years = 10%)

Year	EPS	DPS @ 60%	PVF @ 15%	Present Value
1	9(1.10) = 9.90	5.94	0.8696	5.17
2	9.90(1.10) = 10.89	6.534	0.7561	4.94
				10.11

#### Calculation of Terminal Value (Price at the end of year 2 i.e. P<sub>2</sub>)

$$P_2 = D_2 (1+g)$$
  
Ke – g

= 100.81

Present Value of 
$$P_2 = \frac{100.81}{(1.15)^2}$$
  
= **76.23**

# PROBLEM:4 (a)

State with brief reasons whether the following statements are true or false: (4 Marks)

(i) Maximising Market Price Per Share (MPS) as the financial objective which maximises the wealth of

shareholders.

ANSWER - TRUE - Market price represents the wealth of the shareholders. Wealth maximization is the main objective of financial management.

- (ii) A combination of lower risk and higher return is known as risk-return trade off and at this level of risk-return, profit is maximum.
  - FALSE: A combination of higher risk and higher return is known as risk-return trade off
- (iii) Financial distress is a position when accounting profits of a firm are sufficient to meet its long-term obligations.
  - FALSE: Financial distress is when company is unable to pay its liabilities.
- (iv) Angel investor is one who provides funds for start-up in exchange for an ownership/equity.

TRUE - Angel investor are individual who provides funds for start-up in exchange for an ownership/equity. They take a stake in the company. Angel investors are focused on helping startups take their first steps. Angel investors who seed startups that fail during their early stages lose their investments completely.

## PROBLEM: 4 (b)

ABC Ltd. is approaching the banks for financing its business activity. You are required to describe any four forms of bank credit for the consideration of the company. (4 Marks)

## PROBLEM: 4 (c)

Discuss the relevance of Payback reciprocal in capital budgeting decisions.

(2 Marks)

OR

# PROBLEM: 4 (c)

Explain the features of crowd funding.

