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Paper F9

Financial Management

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Revision Mock – Answers

1 CHANNING CO

> **Key answer tips**
>
> To successfully calculate the NPV of the proposed project, you must focus on the relevant costs (i.e. those costs that will change as a direct result of the project). You can save some time by structuring your answer to part (a) in a way that will give you some of the numbers you'll require to work out the sensitivities in part (b).
>
> Part (c) gives an opportunity to pick up some easy knowledge marks.
>
> The highlighted words in the written sections are key phrases that markers are looking for.

(a) **Annual cash savings**

	$000
Additional contribution (W1)	140
Additional fixed costs	(200)
Reduction in variable cost for existing units (W2)	350
Additional annual cash flows	290

Workings

(W1) New variable cost is $15 – $5 = $10

Unit contribution will therefore be $30 – $10 = $20

Number of additional units is 7,000

Total additional contribution from new units is 7,000 × $20 = $140,000

(W2) Reduction = $5 per unit × 70,000 units = $350,000

Capital allowance calculations

Annual capital allowance = $800,000 / 4 = $200,000

Cash flow effect = $200,000 × 30% = $60,000

Net present value calculation

Year	0	1	2	3	4
	$000	$000	$000	$000	$000
Annual savings		290	290	290	290
Tax payable (30%)		(87)	(87)	(87)	(87)
Initial investment	(800)				
Capital allowances		60	60	60	60
Net cash flows	(800)	263	263	263	263
Discount factor @ 10%	1	0.909	0.826	0.751	0.683
Present value	(800)	239	217	198	180
NPV					34

As the NPV is positive, the project should be undertaken.

(b)   (i)   **Sensitivity to the increase in fixed costs**

Using the sensitivity margin formula:

$$\text{Sensitivity margin} = \frac{\text{NPV}}{\text{PV of flow under consideration}}$$

The flow under consideration is post-tax additional fixed costs.

PV of fixed costs (less tax saved)

Year	Cash flow	$000	Discount factor (10%)	Present value $000
1 – 4	Fixed costs	(200)	3.17	634
1 – 4	Tax	60	3.17	(190)
			NPV	444

$$\text{Sensitivity margin} = \frac{34}{444} \times 100 = 7.66\%$$

This means that the additional fixed costs can increase by 7.66% (to $215,000) before the project is no longer viable.

(ii)   **Sensitivity to the additional annual sales units**

Again, using the same sensitivity margin except this time the flow under consideration is post-tax contribution on the additional units sold.

PV of contribution (less tax)

Year	Cash flow	$000	Discount factor (10%)	Present value $000
1 – 4	Contribution	140	3.17	444
1 – 4	Tax	(42)	3.17	(133)
			NPV	311

$$\text{Sensitivity margin} = \frac{34}{311} \times 100 = 10.9\%$$

This means that additional annual sales can fall by 10.9% (to 6,237) before the project is no longer viable.

(iii)   **Sensitivity to the cost of capital is the internal rate of return**

To find the IRR, discount at a higher rate than 10%. Say 15%.

NPV   = −$800k + ($263k × 15% AF 1-4)

       = −$800k + ($263k × 2.855)

       = −$800k − $751k

       = −$49k

$$\text{IRR} = 10 + \frac{34}{(34 + 49)} \times (15 - 10) = 12\%$$

This means that, if the cost of capital is higher than 12%, the project will have a negative NPV and will no longer be viable.

(c)

>
>
> **Tutor's top tips:**
>
> *Don't forget to tailor your answer to the scenario presented.*

Operational gearing is the risk in relation to the cost structure.

Buying a machine with higher fixed costs but lower variable costs is risky because it needs high volumes to justify the additional fixed costs. If the additional volumes are not achieved, the company could suffer high losses; if high volumes are achieved, it could be very profitable.

One way of calculating the operational gearing ratio is: $\dfrac{\text{Fixed costs}}{\text{Total costs}}$

For Channing, before the investment the operational gearing ratio was:

$$\frac{\$500k}{\$500k + (70k \times \$15)} = 32.3\%$$

If the investment goes ahead, the operational gearing ratio will be:

$$\frac{\$500k + \$200k}{\$500k + \$200k + (77k \times \$10)} = 47.6\%$$

This increase in operational gearing indicates the business is now exposed to more risk.

Marking scheme				
				Marks
(a)		Annual cash flows	2.5	
		Tax thereon	1	
		Initial investment	0.5	
		Capital allowances	1	
		NPV calculation	2	
		Decision	1	
			────	
				8
(b)	(i)	PV of after tax fixed costs	2	
		Sensitivity margin	1	
		Comment	1	
	(ii)	PV of contribution	2	
		Sensitivity margin	1	
		Comment	1	
	(iii)	Recognising that the IRR was required	1	
		Calculation of IRR	2	
		Comment	1	
			────	
				12
(c)		Commentary	3	
		Calculation for Channing, with explanations (give credit for different methods of calculation)	2	
			────	
				5
				────
Total				**25**
				────

2 FIRST PLACE CO

Key answer tips

This scenario is nice and short, with the information laid out in a fairly standard way, but there is a high proportion of written marks.

Part (a) requires a WACC calculation and, although you have equity, preference shares and debt, so there is quite a lot to do, there are no tricks.

Part (b) covers the assumptions of using the WACC as a discount rate. This is tested surprisingly often so you need to make sure you are happy with the answer here.

Part (c) covers fairly standard CAPM territory.

Part (d) provides some easy marks on EMH. This is absolutely standard knowledge.

Part (e) requires specific knowledge of Islamic finance, a relatively new area of the syllabus with a fair amount of detail.

The highlighted words are key phrases that markers are looking for.

(a)   **WACC:**

Cost of equity = $(D_0 (1 + g)) / (P_0) + g$

$= ((0.05 \times 1.08) / 1.5) + 0.08 = 0.036 + 0.08 = 11.6\%$

Cost of debt = $5 (1–0.30) / 50 = 7\%$

Cost of preference shares = $8.40 / 80 = 10.5\%$

WACC = $((300 \times .116) + (20 \times .070) + (16 \times 0.105))/(300 + 20 + 16)$

$= (34.8 + 1.40 + 1.68)/336 = 11.27\%$

(b)   **Use of WACC:**

Tutor's top tips:

It is important to note that the requirement asks for assumptions other than the stated one of gearing remaining constant.

The use of the WACC as a discount rate in investment appraisal depends on a number of principal assumptions.

(i)   The project is of the same level of operating risk as the existing activities.

(ii)   The finance for the project comes from the same pool of funds and is not project specific (and market values are stable). There are no other forms of financing.

(iii)   The project is marginal i.e. small in size relative to the size of the company.

(iv)   The objective of the company is to maximize the current market value of the ordinary shares.

(v)   The market is perfect and the share price is the discounted present value of the dividend stream (the dividend valuation model is correct).

(c)

Tutor's top tips:

As an alternative approach, you could start by stating the CAPM formula and then explain each of the components.

CAPM is a device for determining the investors' required return from risky investments. It is based on the assumption that investors hold 'efficient portfolios', i.e. portfolios of investments that have all specific risk eliminated from them through diversification.

Specific risk is that part of total business risk that relates to the particular investment concerned. This means that CAPM assumes that investors bear systematic or market risk, i.e. the risk that all investments bear, but not all investments bear the same amount of it.

CAPM says that investors should expect to receive the risk-free rate, plus a risk premium. The risk premium should be based on the premium available for the average investment, scaled up or down according to how risky the particular investment is relative to the average investment. This relative (systematic) riskiness is measured by a factor known as beta. Thus CAPM adds (or, in theory, could subtract) a market-derived cost of risk to the risk-free rate.

Is the use of CAPM suitable in the case of First Place Co? As a listed company, it could be assumed that most shareholders are diversified at a portfolio level. For listed companies, there is usually publicly available information on the beta and for estimating the risk-free rate, a long-term historic rate on government securities would be used. Similarly, the expected return from the market portfolio (the average investment return) would be based on the long-term historic equity returns.

Comparison with other companies in the same sector would have to include adjustments to the beta in respect of different gearing levels.

(d) **Stock market efficiency:**

One of the principal assumptions underlying financial management is that the market value of a security is based upon investors' expectations of future earnings derived from that security, and that those earnings are discounted at the investors' required rate of return. Expectations of future earnings are based upon information available in the market.

Efficient Markets Hypothesis:

The efficient market hypothesis considers how efficient the market is at incorporating the price information available to investors. Three possible levels of efficiency have been postulated.

Weak form: A market is weak form efficient if all the information which has been gleaned from a security's past price movement has been reflected in the current market value of the security.

Semi-strong form: A market is semi-strong form efficient if all publicly-known information about a company, including its plans, together with information about the security's past price movements, is reflected in the current market value of that security.

Strong form: A market is said to be strong form efficient if the current market value of a security reflects all relevant information, including information which is supposedly secret to the company.

(e) **Mudaraba**

Mudaraba is a special kind of partnership where one partner gives money to another for investing it in a commercial enterprise. The investment comes from the first partner (who is called 'rab ul mal'), while the management and work is an exclusive responsibility of the other (who is called 'mudarib').

The Mudaraba (profit sharing) is a contract, with one party providing 100% of the capital and the other party providing its specialist knowledge to invest the capital and manage the investment project. Profits generated are shared between the parties according to a pre-agreed ratio. In a Mudaraba only the lender of the money has to take the losses.

Musharaka

Musharaka is a relationship between two or more parties, who contribute capital to a business, and divide the net profit and loss pro rata. All providers of capital are entitled to participate in management, but are not required to do so. The profit is distributed among the partners in pre-agreed ratios, while the loss is borne by each partner strictly in proportion to their respective capital contributions.

<table>
<tr><th colspan="4" align="center">Marking scheme</th></tr>
<tr><td></td><td></td><td></td><td align="right">*Marks*</td></tr>
<tr><td>(a)</td><td>Cost of equity</td><td>2</td><td></td></tr>
<tr><td></td><td>Cost of debt</td><td>1</td><td></td></tr>
<tr><td></td><td>Cost of preference shares</td><td>1</td><td></td></tr>
<tr><td></td><td>WACC</td><td>1</td><td></td></tr>
<tr><td></td><td></td><td>—</td><td></td></tr>
<tr><td></td><td></td><td></td><td align="right">5</td></tr>
<tr><td>(b)</td><td>1 mark per relevant point adequately discussed</td><td></td><td align="right">4</td></tr>
<tr><td>(c)</td><td>1 mark per relevant point adequately discussed</td><td></td><td align="right">6</td></tr>
<tr><td>(d)</td><td>Explanation of EMH</td><td>1</td><td></td></tr>
<tr><td></td><td>Weak form</td><td>2</td><td></td></tr>
<tr><td></td><td>Semi-strong form</td><td>2</td><td></td></tr>
<tr><td></td><td>Strong form</td><td>2</td><td></td></tr>
<tr><td></td><td></td><td>—</td><td></td></tr>
<tr><td></td><td></td><td></td><td align="right">Max 6</td></tr>
<tr><td>(e)</td><td>Mudaraba- 1 mark per relevant point adequately discussed</td><td>2</td><td></td></tr>
<tr><td></td><td>Musharaka- 1 mark per relevant point adequately discussed</td><td>2</td><td></td></tr>
<tr><td></td><td></td><td>—</td><td></td></tr>
<tr><td></td><td></td><td></td><td align="right">4</td></tr>
<tr><td></td><td></td><td></td><td align="right">—</td></tr>
<tr><td>**Total**</td><td></td><td></td><td align="right">**25**</td></tr>
<tr><td></td><td></td><td></td><td align="right">—</td></tr>
</table>

3 AUGUSTA CO

> **Key answer tips**
>
> Be careful not to focus solely on the calculations in parts (a) and (b) where the requirements are to 'explain' and 'discuss'.
>
> Part (c) of this question is stand-alone and should give an opportunity to pick up some easy marks.
>
> The highlighted words in the written sections are key phrases that markers are looking for.

(a) Rights issues tend to reduce the market price of shares because they are sold at a discount to the market price. This is a necessary (but not a sufficient) requirement of a successful rights issue (potential investors still need to be convinced that taking up the rights represents a good investment on their part).

The theoretical ex-rights price is:

New finance required	$200m
Issue price ($2.10 less 10%)	$1.89
Number of new shares (i.e. $200m/$1.89)	105.82m
Existing number of shares	1,000.00m
New number of shares	1,105.82m
Existing market value (1,000m × $2.10)	$2,100m
Value of new issue	$200m
New market value	$2,300m
New share price ($2,300m/1,105.82)	$2.08

The actual market price will be greater than the theoretical ex-rights price if the new money is invested in positive NPV projects, i.e. the money will earn a greater return than the required return for that investment. Thus the market price of the share will only equal the theoretical ex-rights price if the new money earns just the required return for the investment (i.e. the NPV of the investment is zero).

However, very often any positive NPV expected for a project will already be reflected in the existing market price of the share.

(b) **Gearing**

Ignoring the overdraft, the gearing ratios will be:

	Current	Equity finance	Debt finance
Debt ($m)	300	300	500
Equity ($m)	1,500	1,700	1,500
Gearing	20%	17.6%	33.3%

Alternatively, since it is substantial, you may include the overdraft as follows:

	Current	Equity finance	Debt finance
Debt ($m)	380	380	580
Equity ($m)	1,500	1,700	1,500
Gearing	25.3%	22.4%	38.7%

Gearing is currently 20% (or 25.3%). This is relatively low, reflecting the risky nature of current operations.

With a new share issue, gearing will fall to 17.6% (or 22.4%) whereas, with more debt, it will rise to 33.3% (38.7%). Although debt financing is more risky, the gearing is still relatively low.

EPS

EPS is currently 118/1,000 = 11.8c

The projected income statement is ($m)

	Ordinary	CULS
Operating profit	250	250
Interest	40	56
Profit before tax	210	194
Tax	63	58
Profit after tax	147	136
Number of shares (m)	1,106	1,000
EPS	13.3c	13.6c

The higher EPS if the company expands using debt may compensate for the higher financial risk borne by the ordinary shareholders.

Interest cover – currently 5.2, i.e. 208/40, and changes to:

Ordinary	CULS
6.2	4.5

All look relatively comfortable – reducing the risk regarding financing.

(c) Stakeholders in a company include shareholders, directors/managers, lenders, employees, suppliers and customers. These groups are likely to share in the wealth and risk generated by a company in different ways and thus conflicts of interest are likely to exist. Conflicts also exist not just between groups, but within stakeholder groups.

This might be because sub-groups exist, for example preference shareholders and equity shareholders, within the overall category of shareholders. Alternatively, individuals within a stakeholder group might have different preferences (e.g. to risk and return, short-term and long-term returns). Good corporate governance is partly about the resolution of such conflicts. Financial and other objectives of stakeholder groups may be identified as follows:

Shareholders

Shareholders are normally assumed to be interested in wealth maximisation. This, however, involves consideration of potential return and risk. For a listed company, this can be viewed in terms of the changes in the share price and other market-based ratios using share price (e.g. price/earnings ratio, dividend yield, earnings yield).

Where a company is not listed, financial objectives need to be set in terms of other financial measures, such as return on capital employed, earnings per share, gearing, growth, profit margin, asset utilisation, and market share. Many other measures also exist which may collectively capture the objectives of return and risk.

Shareholders may have other objectives for the company and these can be identified in terms of the interests of other stakeholder groups. Thus, shareholders as a group may be interested in profit maximisation; they may also be interested in the welfare of their employees, or the environmental impact of the company's operations.

Directors and managers

While executive directors and managers should attempt to promote and balance the interests of shareholders and other stakeholder groups, it has been argued that they also promote their own individual interests and should be seen as a separate stakeholder group.

This problem arises from the divorce between ownership and control. The behaviour of managers cannot be fully observed by the shareholders, giving them the capacity to take decisions that are consistent with their own reward structures and risk preferences. Directors may therefore be interested in their own remuneration package. They may also be interested in building empires, exercising greater control, or positioning themselves for their next promotion. Non-financial objectives of managers are sometimes inconsistent with what the financial objectives of the company ought to be.

Employees

The primary interests of employees are their salary/wage and their security of employment. To an extent there is a direct conflict between employees and shareholders, as wages are a cost to the company and income to employees.

Performance-related pay based on financial or other quantitative objectives may, however, go some way toward drawing the divergent interests together.

Marking scheme			
			Marks
(a)	Why share price falls	1	
	TERP calculation	4	
	When TERP will occur	2	
		———	
			7
(b)	Gearing calculations	3	
	EPS calculations	3.5	
	Interest cover calculations	1.5	
	1 mark for discussion on each set of ratios	3	
		———	
			11
(c)	Discussion on divergent interests	3	
	Up to 2 marks for discussion of objectives per stakeholder	6	
		———	
			Max 7
			———
Total			**25**
			———

4 JMD CO

Key answer tips

Part (a) provides some easy marks for straight-forward knowledge.

Although calculating investment in working capital is a fairly mechanical process, it's easy to get overwhelmed by the numbers in part (b). Care is needed to ensure you manage your time properly and don't miss out of some of the easier 'learn and churn' marks in the question.

You will use your workings to provide advice in part (c). It is important not to sit on the fence, make a decision and give your reasons.

Part (d) is a fairly typical FRA question. It is important to familiarise yourself with these workings and to be able to explain the steps involved.

The highlighted words in the written sections are key phrases that markers are looking for.

(a) The motives for holding cash are:

Transactions motive – to pay the normal day to day transactions of the company including payments to suppliers for instance.

Investment motive – to pay for investment in new plant and machinery for instance.

Precautionary motive – to pay for unexpected needs that may arise at any time. Payments to hire a spare machine to replace one which is having to be repaired for example.

Finance motive – to make payments to providers of finance such as debt lenders.

A speculative motive is also sometimes mentioned. This is where funds are held in order to be able to rapidly take advantage of opportunities which may arise.

(b)

Tutor's top tips:

The key to quickly and efficiently preparing a schedule for investment in working capital is a methodical approach using well structured workings.

The vast majority of questions will be laid out in a user friendly way; the examiner isn't trying to trick you.

Work your way through the information provided, at all times working out the impact that piece of information will have on working capital.

Initial calculation

Current sales = $3m. Proposed sales = $3m × 1.05 = $3.15m

Gross profit margin = 20%, therefore cost of sales = 80%

	Current policy $000	Proposed policy $000
Current assets		
Inventory		
[$3m × 0.8 × 3/12]	600.00	
[$3.15m × 0.8 × 3/12]		630.00
Receivables		
[($3m × 1/12 × 30%) + ($3m × 2/12 × 70%)]	425.00	
[($3.15m × 1/12 × 60%) + ($3.15m × 2/12 × 40%)]		367.50
Cash	140.00	140.00
Total current assets	1,165.00	1,137.50
Current liabilities		
Trade payables		
[$3m × 0.8 × 2/12]	400.00	
[$3.15m × 0.8 × 2/12]		420.00
Accrued variable expenses		
[$3m × 0.1 × 1/12]	25.00	
[$3.15m × 0.1 × 1/12]		26.25
Accrued fixed expenses	15.00	15.00
Total current liabilities	440.00	461.25
Investment in working capital (current assets less current liabilities)	725.00	676.25

(c) Under the proposed policy, we can see that the investment in working capital will be slightly lower than under the current policy. However, profits will be substantially lower as a result of offering discounts. The increase in sales resulting from the discounts will not be sufficient to offset the additional costs of making the discounts to customers.

Another consideration is interest. The company has managed to keep the same cash balance each year, but if receipts from receivables are collected earlier it should increase the cash balance/reduce the overdraft. The difference in profit between the two policies is $30,000 (see below) and the reduction in receivables is $57,500 ($425,000 – $367,500).

The interest earned on early repayment would have to be very high to make up the difference in profit (see working below).

		$	$
Increase in gross profit	((20% × $3.15m) – (20% × $3m))		
	————————————		30,000
Increase in variable expenses	26,250 – 25,000 (see above)		
	————————————		(1,250)
Cost of discount	60% × $3.15m × 2.5%		
	————————————		(47,250)
			———
Net cost			(18,500)
			———

The interest rate would, therefore, need to be 18,500/57,500 = 32.2%

It seems that the company should, therefore, stick with its current policy.

(d)

Tutor's top tips:

It is important to lay out your workings in a clear, easy to follow format. For your calculations, the presentation shown below is recommended.

A forward rate agreement is an over-the-counter agreement between a bank and a customer. A customer can buy an FRA to fix the interest rate for a short-term loan starting at a future date. The FRA relates to a specific borrowing period. In the example given in the question the company can borrow for a period of 6 months starting in 2 months time at a simple annual interest rate of 5.0%. This locks the company into an effective interest rate of 5.0% whatever the market rate.

The company enters into a normal loan but independently organises a forward with a bank:

- interest is paid on the loan in the normal way

- if the interest is greater than the agreed forward rate, the bank pays the difference to the company

- if the interest is less than the agreed forward rate, the company pays the difference to the bank.

The FRA:

		6%	*4%*
Interest payable	2m × .06 × 6/12	(60,000)	
	2m × .04 × 6/12		(40,000)
Compensation receivable		10,000	
Payable			(10,000)
		———	———
Locked into the effective interest rate of 5%	2m × .05 × 6/12	(50,000)	(50,000)
		———	———

In this case JMD is protected from a rise in interest rates, but is not able to benefit from a fall in interest rates – it is locked into a rate of 5%. The FRA hedges the company against both an adverse movement and a favourable movement.

	Marking scheme		
			Marks
(a)	2 marks per explained motive		Max 6
(b)	Inventory	2	
	Receivables	3	
	Trade payables	2	
	Other payables	2	
	Net working capital	1	
		───	
			10
(c)	Discussion of issues	2	
	Recommendation	1	
		───	
			3
(d)	Explanations	3	
	Calculations	3	
		───	
			6
			───
Total			**25**
			───